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qMRI analysis of cartilage and bone.

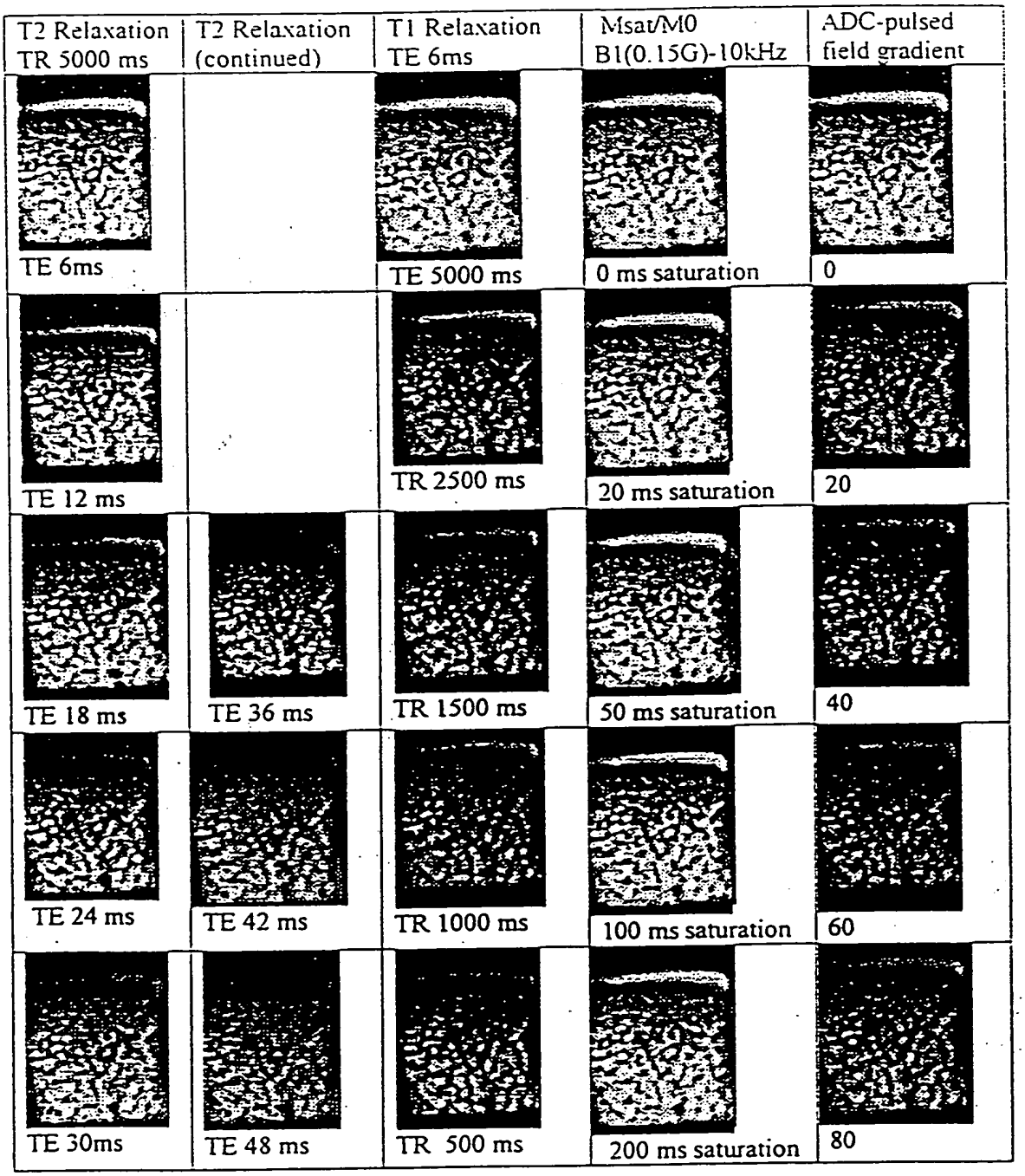
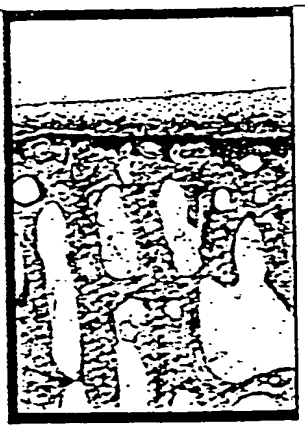


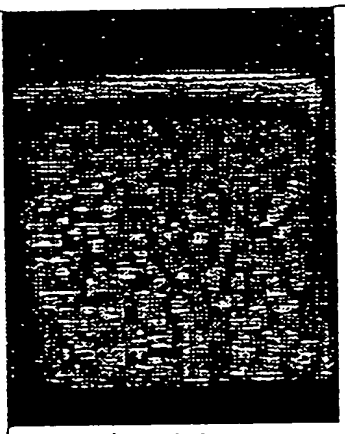
Figure SRL 1
A complete set of MRI scans from the qMRI analysis of one osteochondral plug (C4) showing the sequence of data acquisition and change in signal intensity of the cartilage.

Express Mail No. EV 339 760 405 US

C4 Unoperated control

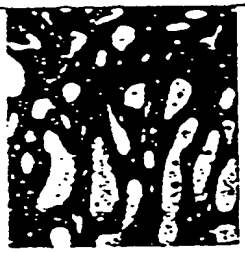


C4. Histology of unoperated cartilage and bone

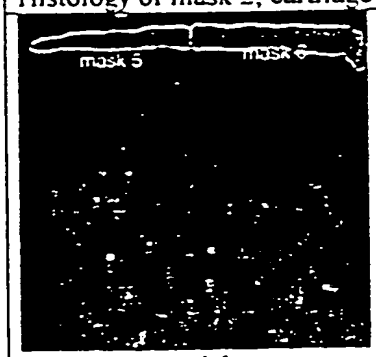


C4 masks 2 and 4

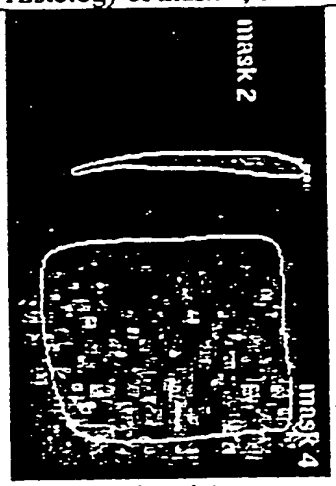
Histology of mask 2, cartilage



Histology of mask 4, bone



C4 masks 5 and 6



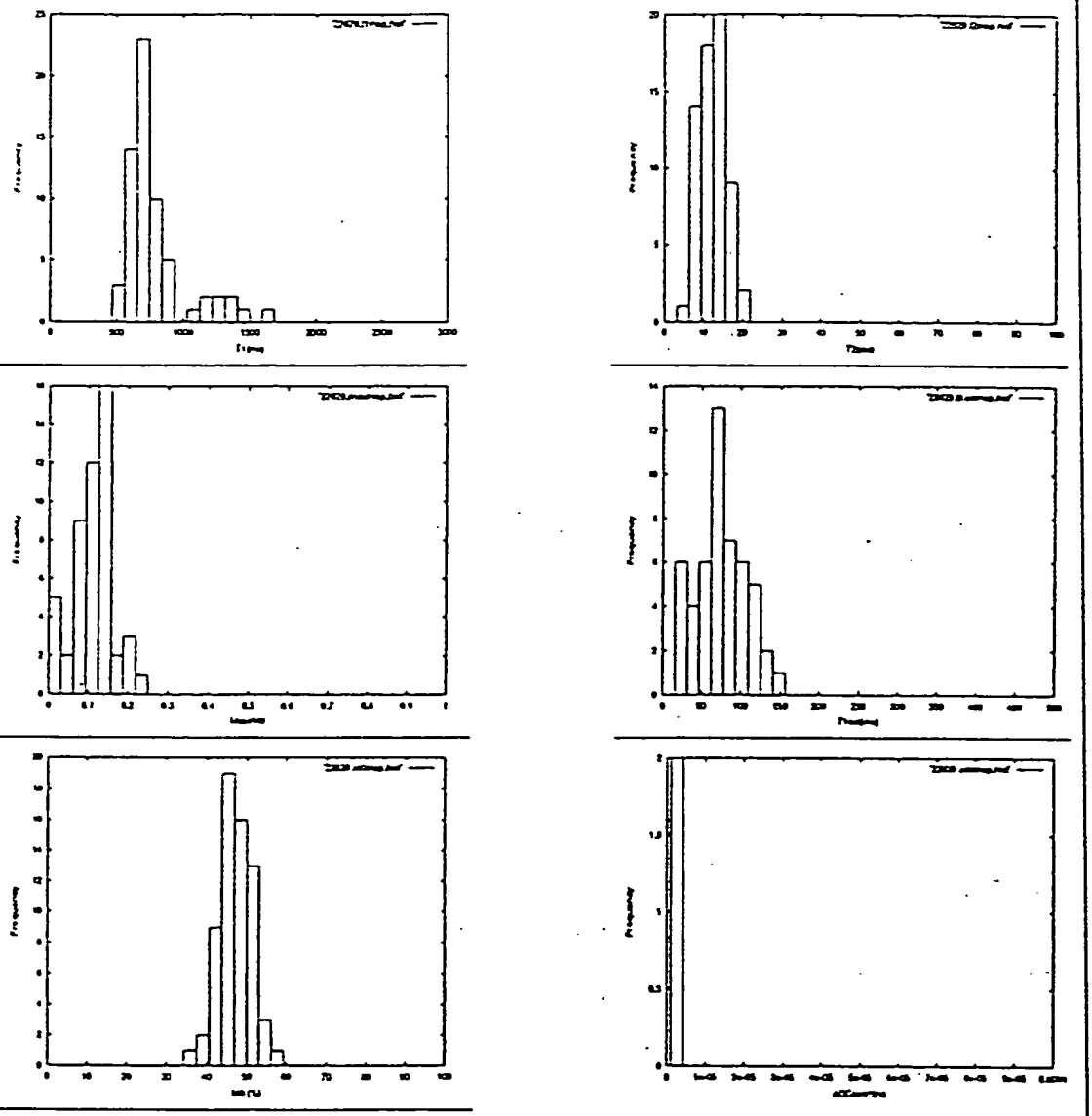
C4 masks 2 and 4

Figure SRL 2
Definition of masks2, 4, 5, and 6 chosen for qMRI analysis of cartilage and bone.

EL504470208236O

C4 mask 2, unoperated cartilage

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	48.8	0.5	Msat/M0	0.116	0.007
T1(ms)	812	30	T1sat(ms)	77	5
T2(ms)	12.8	0.5	ADC(cm2/s)	8.1e-07	3.1e-07



Pigc 3838-3843

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

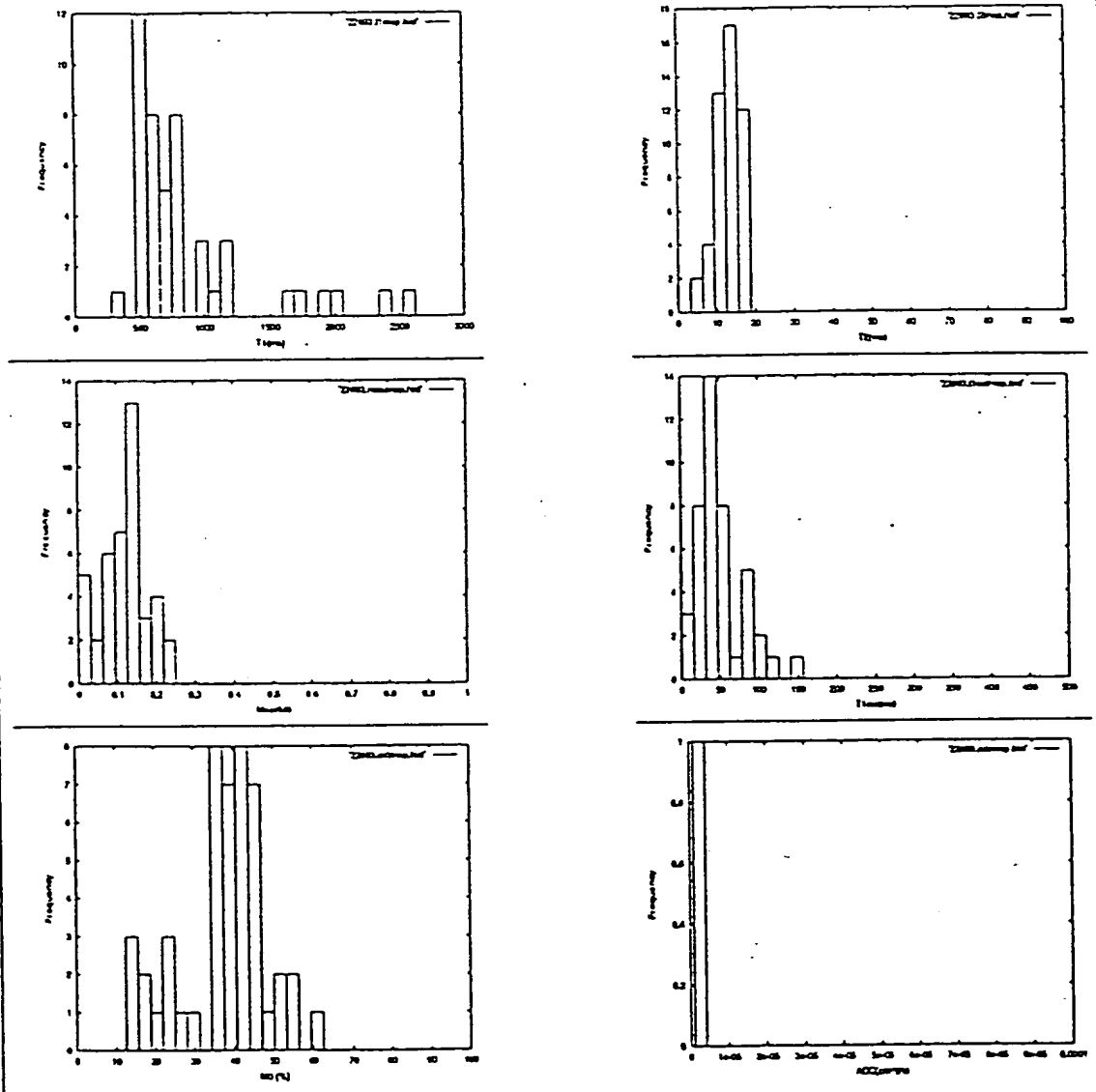
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 3. Automated output of histograms for C4 mask 2

1750480 - 0708289

C4 mask 5, unoperated cartilage

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	38.5	1.7	Msat/M0	0.125	0.009
T1(ms)	907	76	T1sat(ms)	53	5
T2(ms)	13.8	0.5	ADC(cm2/s)	6.4e-07	2.1e-07



Pigc 3838-3843

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

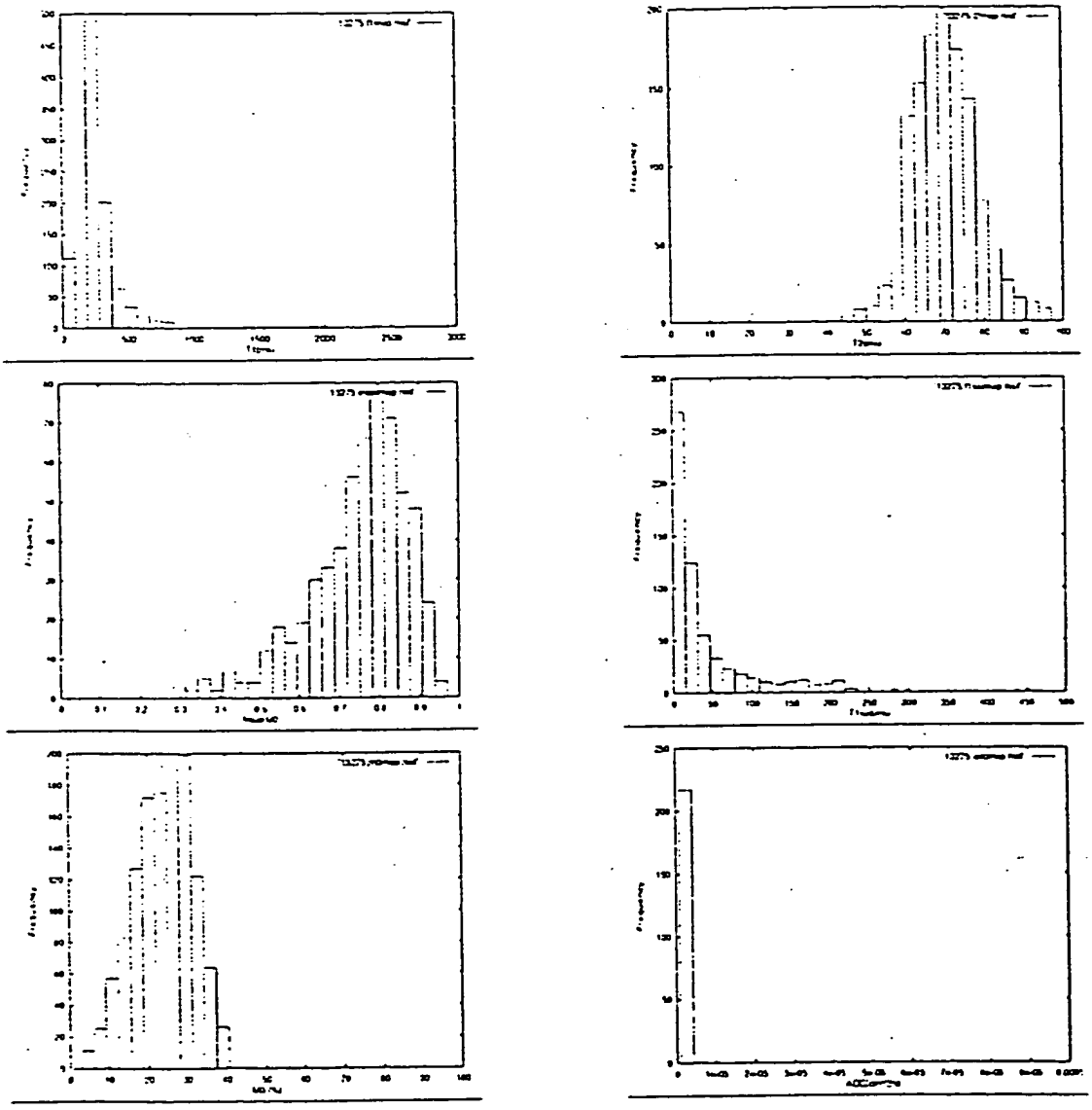
Figure SRL 4 Automated output of histograms for C4 mask 5

Express Mail No. EV 050470708US

FD5040 "07/08/2850

C4 mask 4, unoperated bone

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	24.9	0.2	Msat/M0	0.769	0.006
T1(ms)	291	9	T1sat(ms)	63	4
T2(ms)	73.2	0.3	ADC(cm2/s)	8.6e-07	2.4e-08

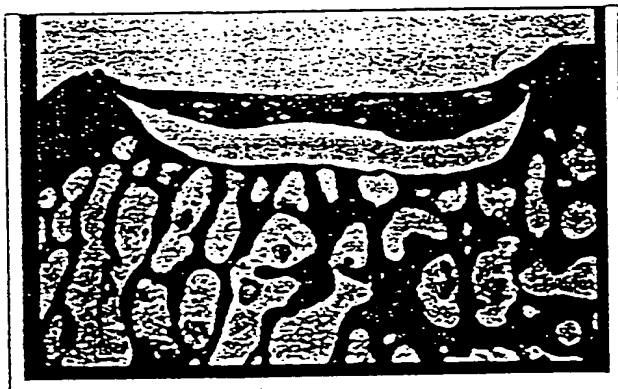


Pigc 3838-3843

x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

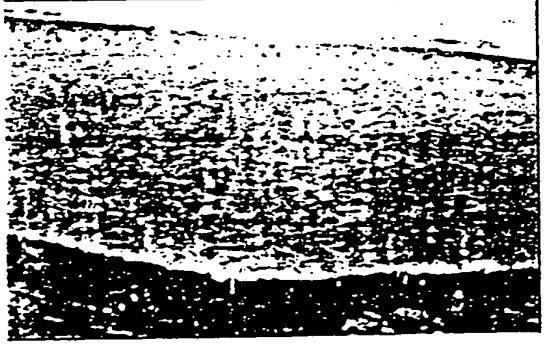
Figure SRL 5 Automated output of histograms for C4 mask 4.

C128 (ACD1 + HAED, vital flap) zero time point



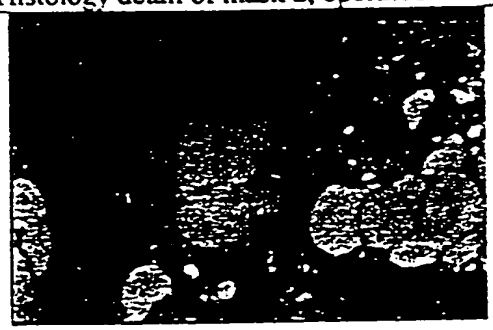
C128 Histology of defect

C128 Histology of defect



Histology detail of mask 2, operated cartilage

Histology detail of mask 6, synovial flap



Histology detail of mask 4, HAED matrix

Not available – presumed lost during histology processing

Histology detail of mask 7, HAED + synovial mince

Figure SRL 6. C128 (ACD1 + HAED,vital flap) zero time point
Histology showing detail of masks 2, 3, 6 and 7.

EP 1 507 870 A2

qMRI analysis of C128

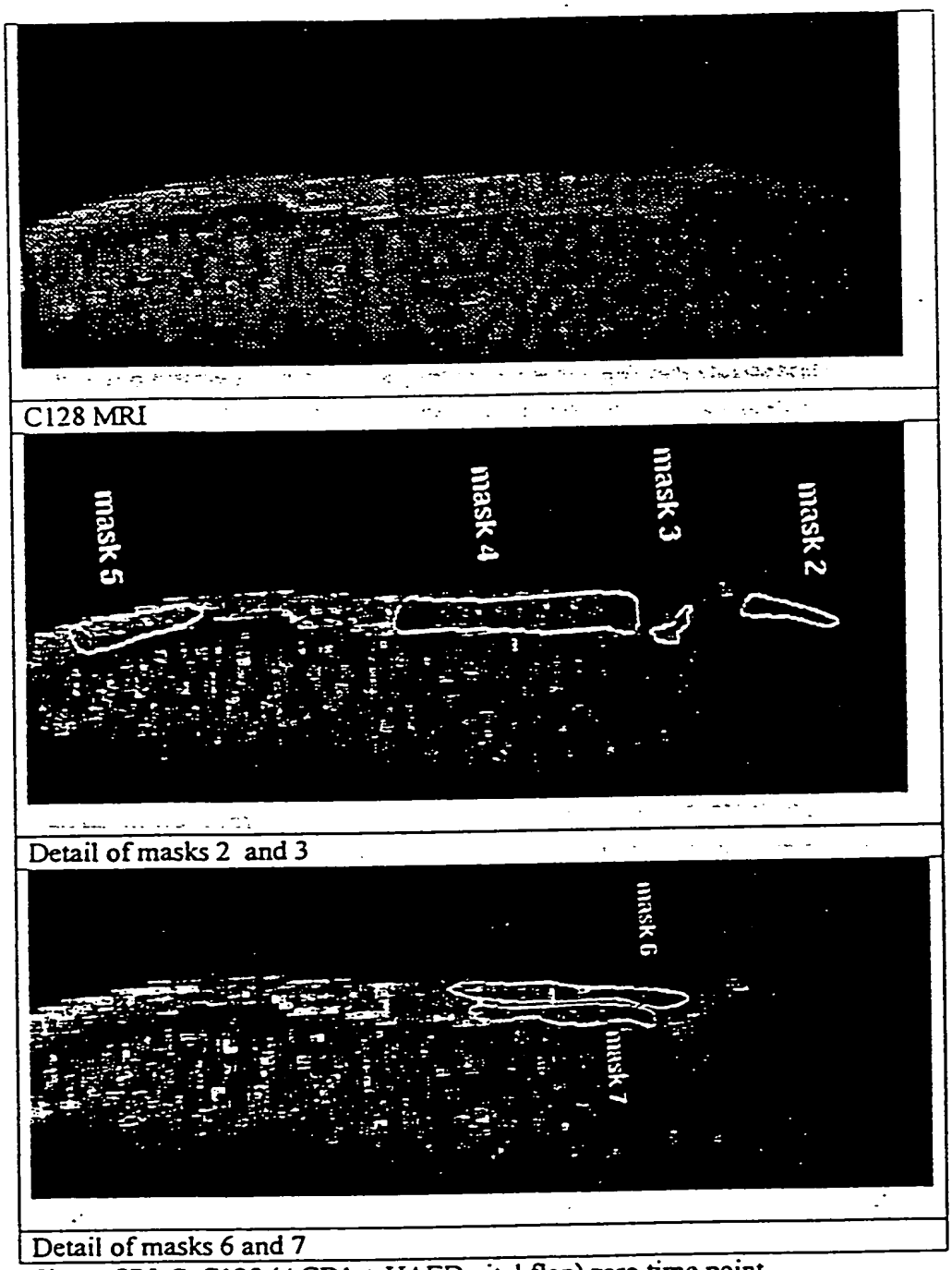
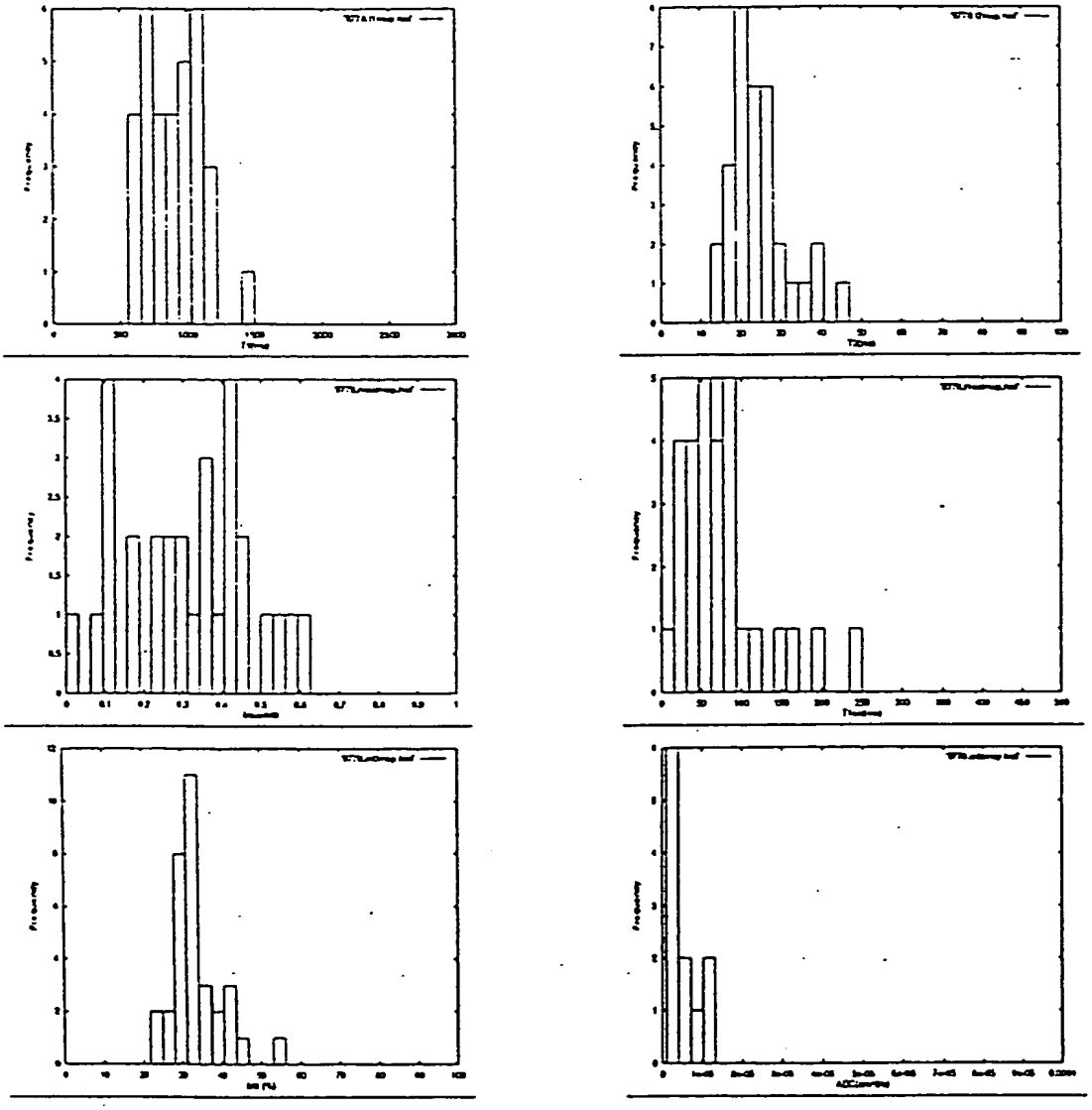


Figure SRL 7. C128 (ACD1 + HAED,vital flap) zero time point
Definition of masks 2, 3, 6 and 7 for qMRI analysis.

EP 0 450 080 B1

C128 qMRI values for mask 2, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	34.8	1.2	Msat/M0	0.326	0.031
T1(ms)	931	36	T1sat(ms)	79	10
T2(ms)	25.5	1.3	ADC(cm2/s)	3.2e-06	9.4e-07



ongg 493-498-2

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

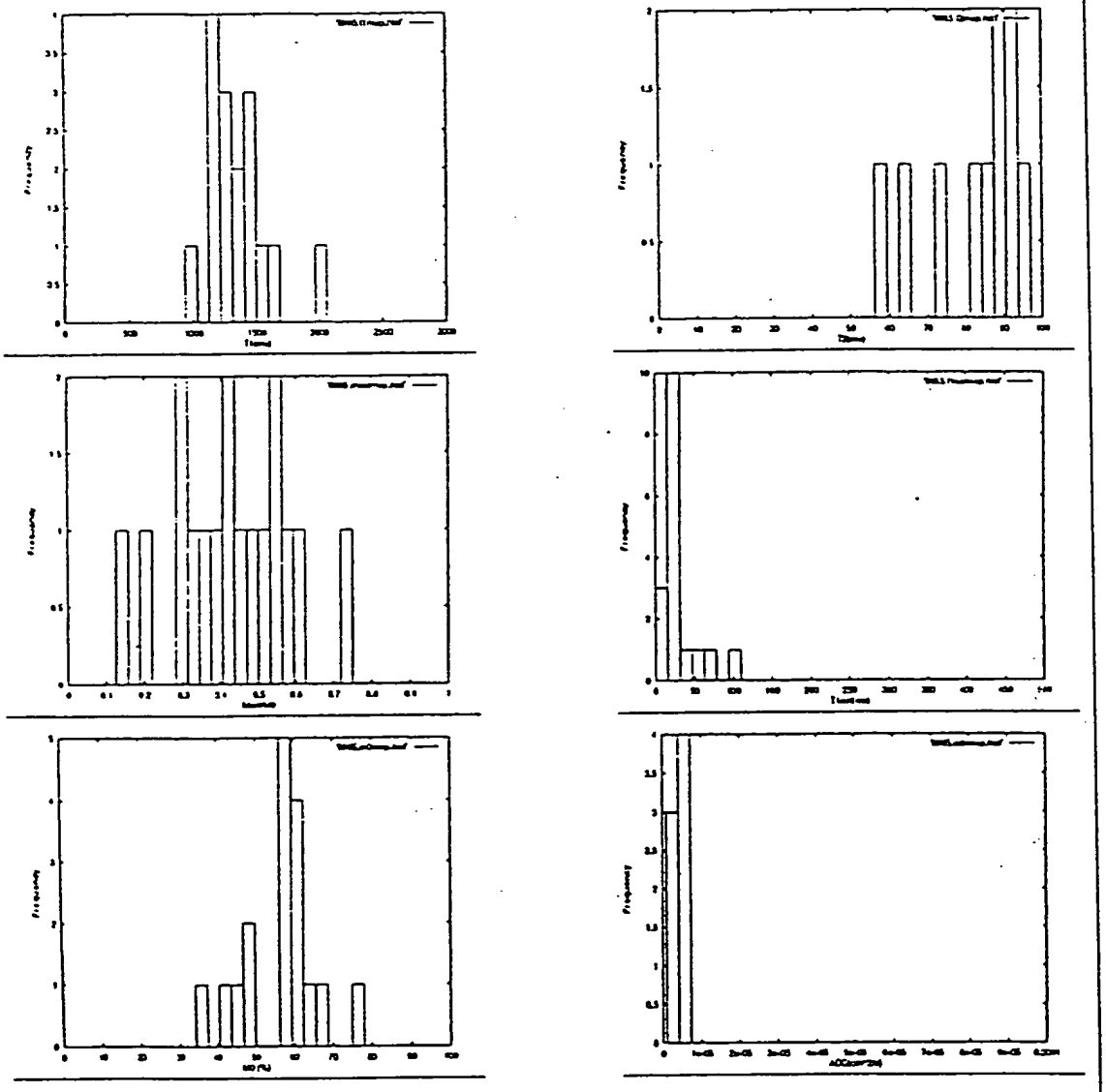
y axis - range of values.
RHS top T2,mid T1sat,bottom ADC

Figure SRL 8. Automated output of histograms for C128 mask 2

EL950470US 02087000100

C128 qMRI values for mask 3, HAED matrix

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	58.5	2.5	Msat/M0	0.442	0.037
T1(ms)	1684	200	T1sat(ms)	31	6
T2(ms)	96.9	4.2	ADC(cm2/s)	3.4e-06	6.3e-07



ongg 493-498-3

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

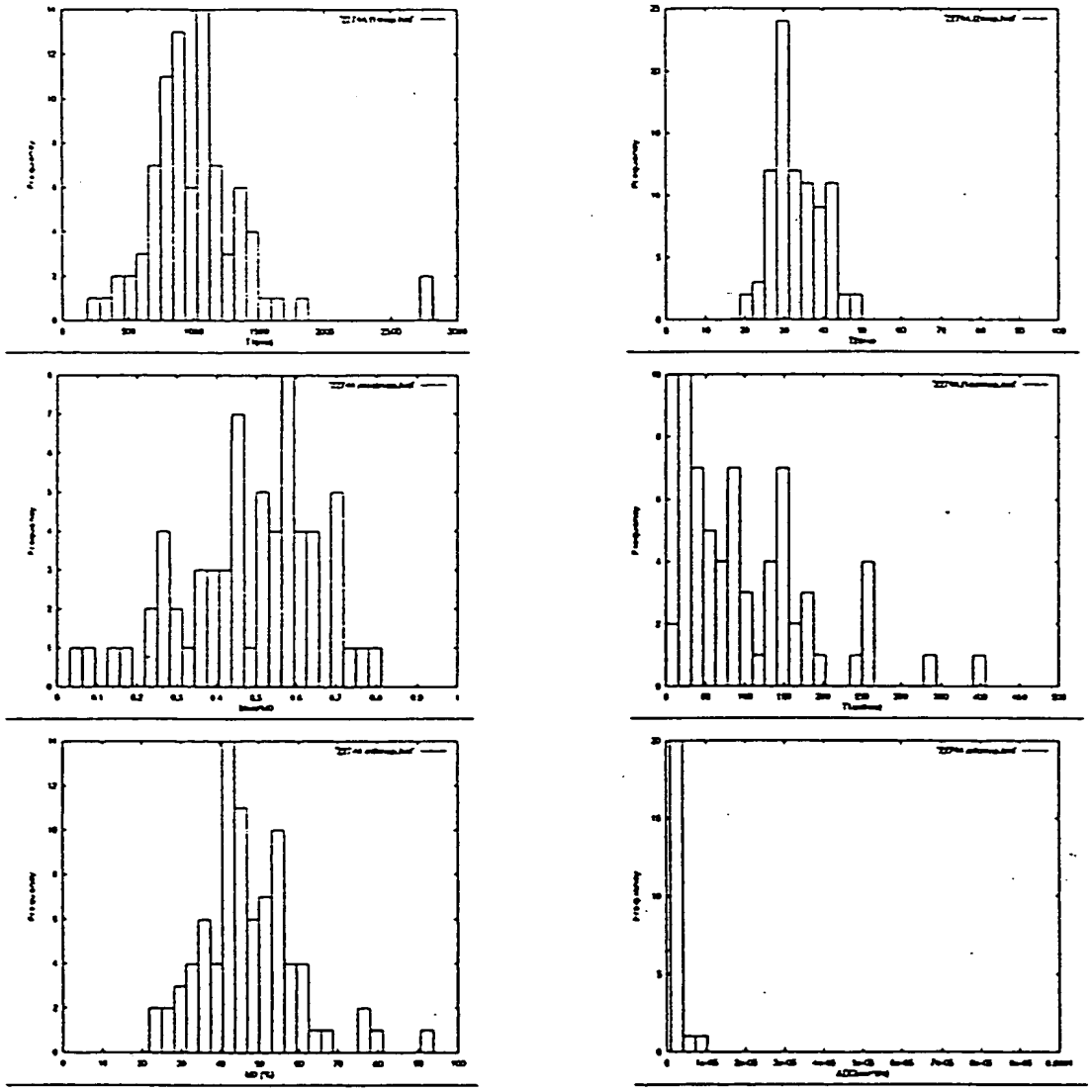
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 9. Automated output of histograms for C128 mask 3

09280700-040501

C128 qMRI values for mask 6, synovial flap

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	48.7	1.4	Msat/M0	0.496	0.022
T1(ms)	1083	52	T1sat(ms)	110	11
T2(ms)	34.5	0.7	ADC(cm2/s)	2e-06	3.2e-07



ongg 493-498-6

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

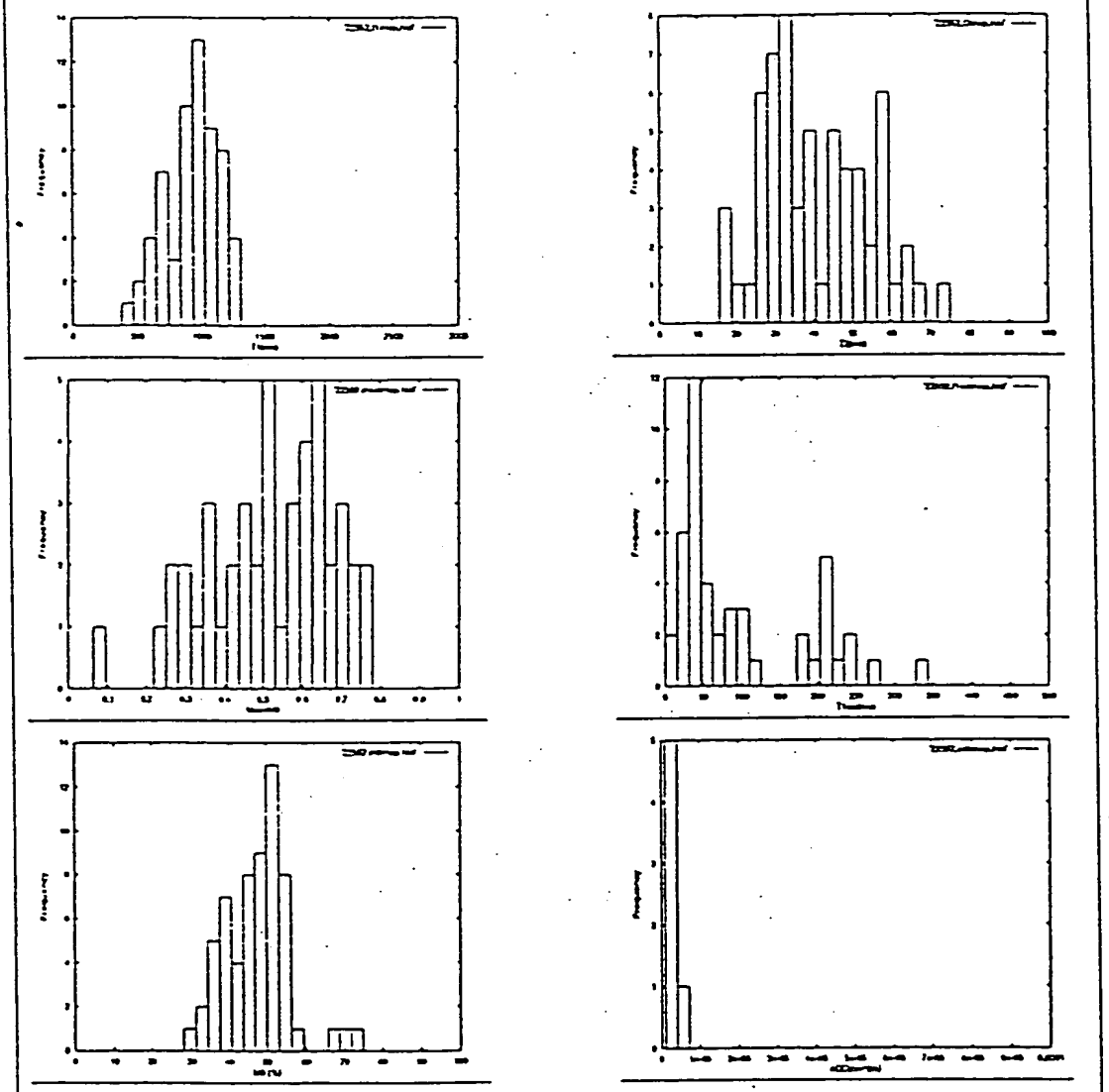
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 10. Automated output of histograms for C128 mask 6

Patent Application Publication

C128 qMRI values for mask 7,HAED ÷ synovial mince

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	49.0	1.1	Msat/M0	0.537	0.025
T1(ms)	968	27	T1sat(ms)	124	19
T2(ms)	42.2	1.8	ADC(cm2/s)	2e-06	5.4e-07



ongg 493-498-7

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 11. Automated output of histograms for C128 mask 7

EDS04405980 - 07/08/2009

C129 (ACD1 + HAED, vital flap) 8 weeks

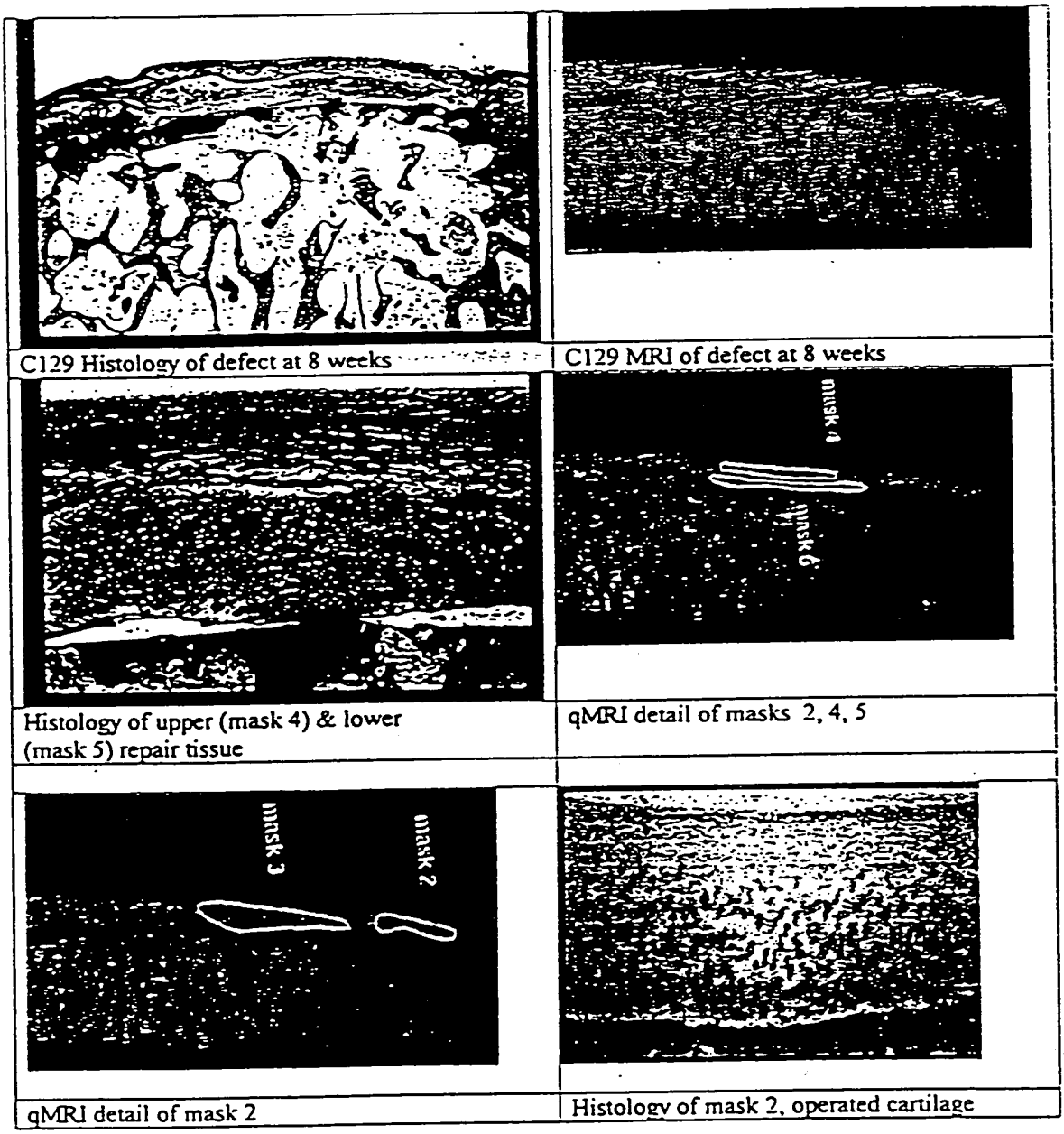
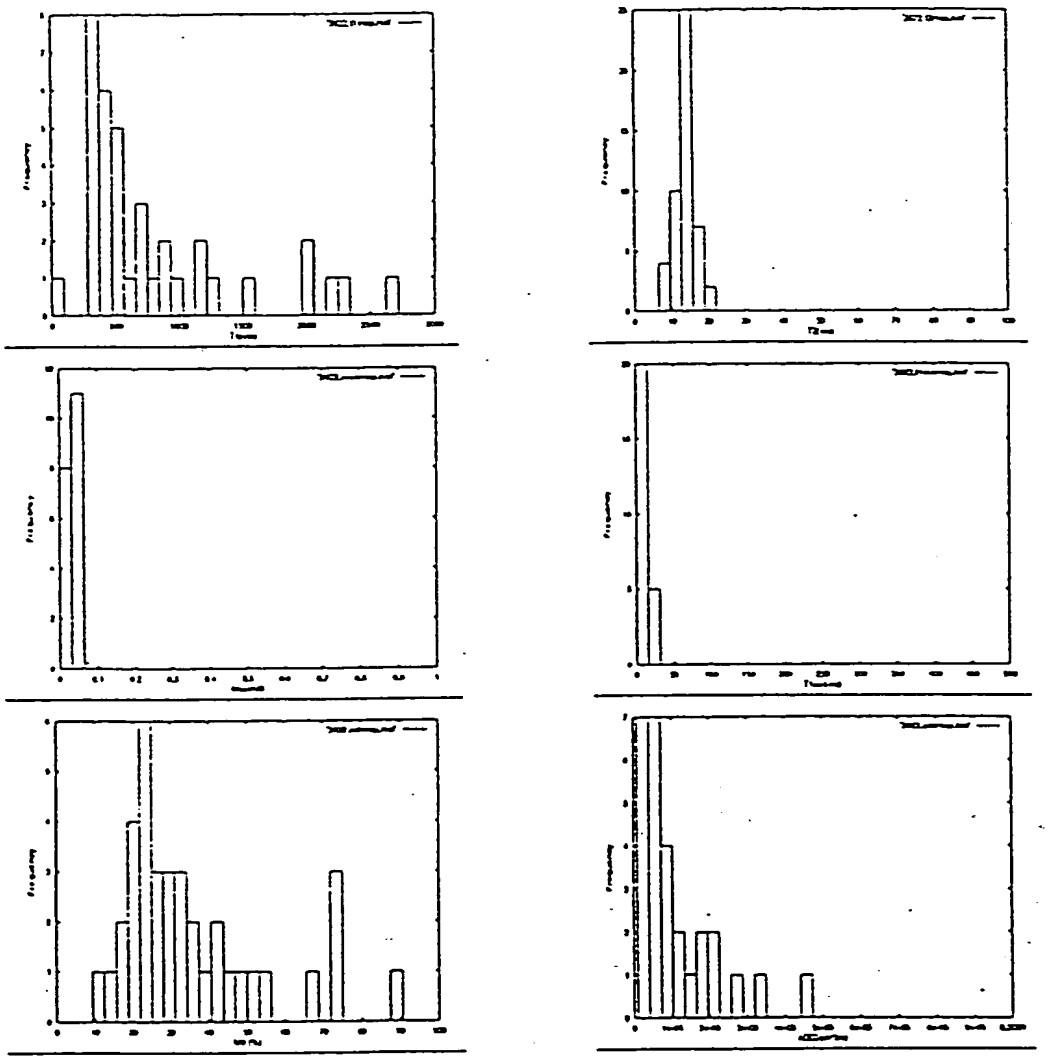


Figure SRL 12.
C129 (ACD1 + HAED,vital flap) 8 weeks
Histology and MRI showing detail of masks 2, 3, 4 and 5.

Express Mail Label No. EV 335 880 205 US

C129 qMRI values for mask 2, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	36.8	3.2	Msat/M0	0.032	0.003
T1(ms)	1092	173	T1sat(ms)	11	2
T2(ms)	14.2	0.4	ADC(cm2/s)	1.1e-05	2e-06



ongg752-757-2

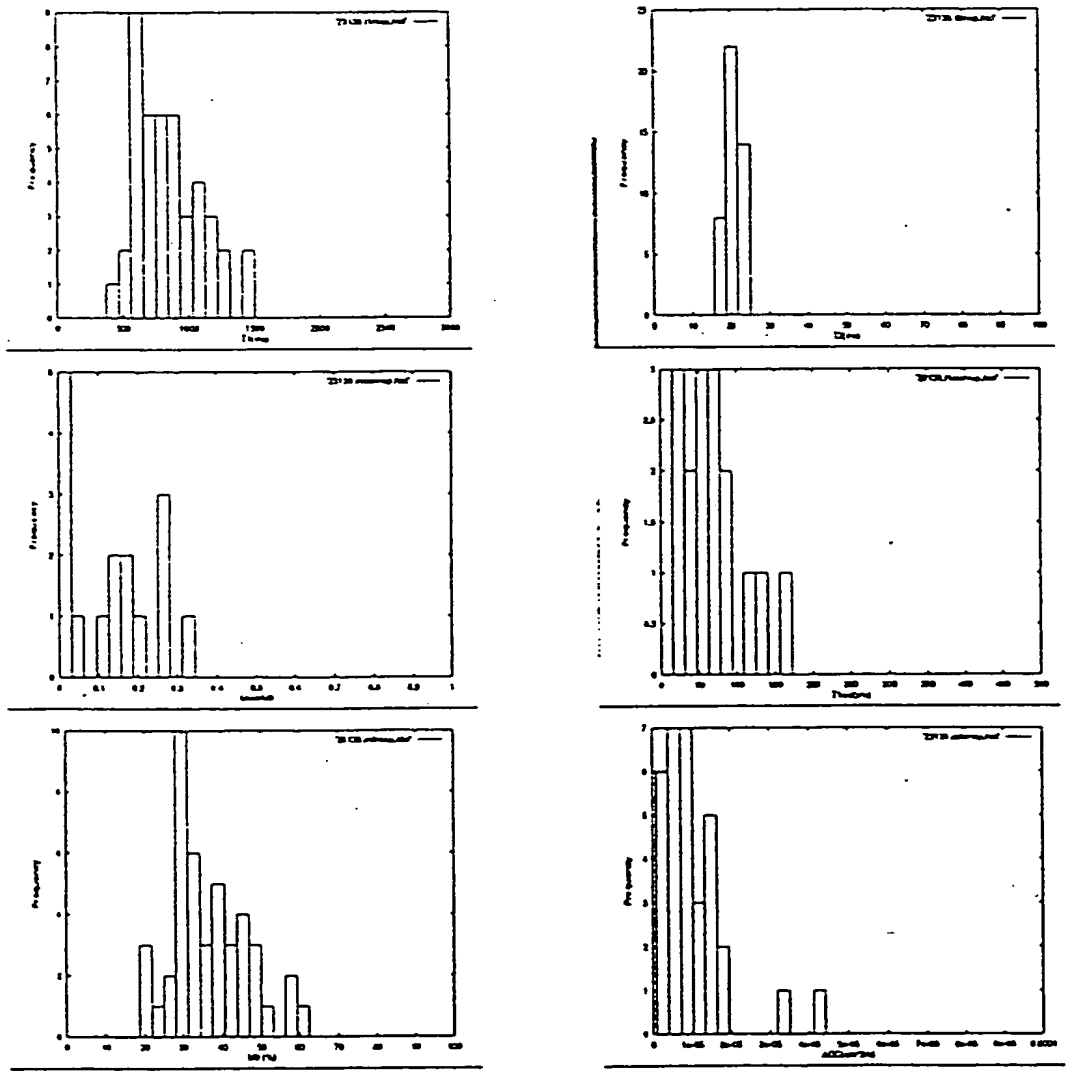
x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 13. Automated output of histograms for C129 mask 2

T0504P0 0/0083850

C129 qMRI values for mask 5, lower repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	38.0	1.6	Msat/M0	0.138	0.027
T1(ms)	876	40	T1sat(ms)	69	11
T2(ms)	21.8	0.3	ADC(cm2/s)	1e-05	1.5e-06



ongg752-757-5

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

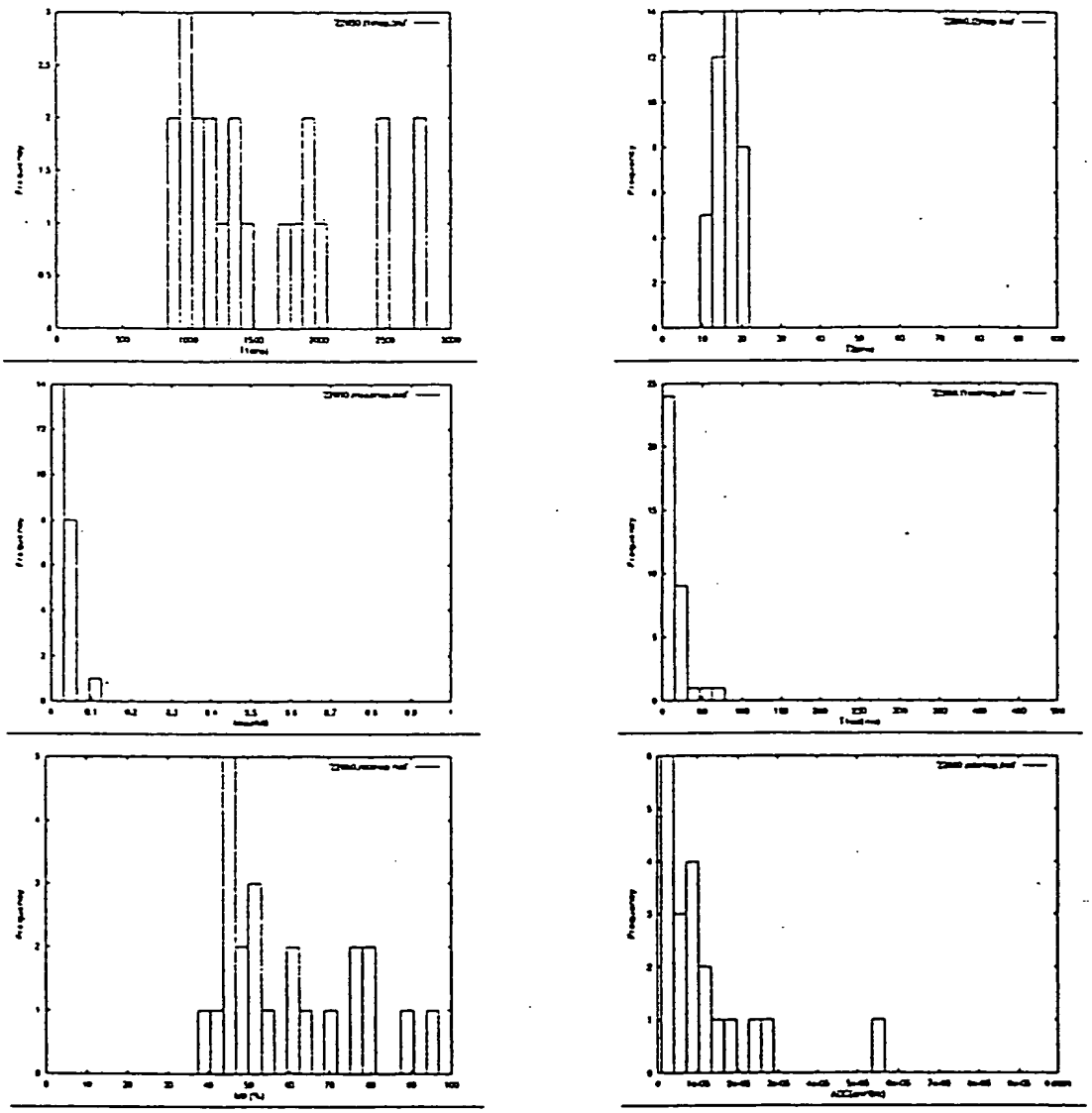
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 14. Automated output of histograms for C129 mask 5

10550104.020704

C129 qMRI values for mask 4, upper repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	61.4	3.5	Msat/M0	0.036	0.005
T1(ms)	2025	227	T1sat(ms)	16	3
T2(ms)	16.8	0.4	ADC(cm2/s)	1.1e-05	2.7e-06



ongg752-757-4

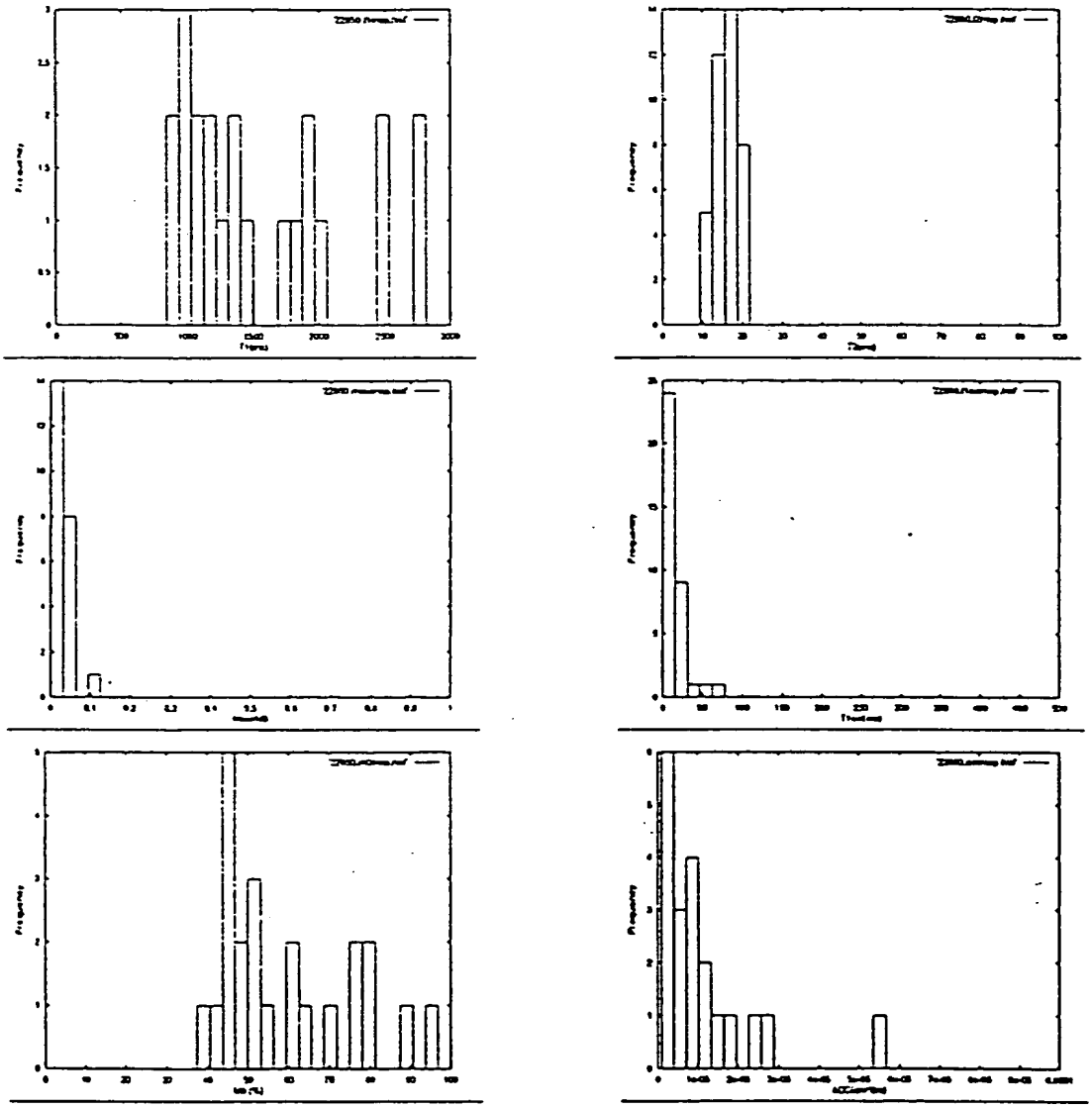
x axis – number of pixels with the same value
y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 15. Automated output of histograms for C129 mask 4

T-550 P.040/070 D-208 F-890

C129 qMRI values for mask 3 repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	61.4	3.5	Msat/M0	0.036	0.005
T1(ms)	2025	227	T1sat(ms)	16	3
T2(ms)	16.8	0.4	ADC(cm2/s)	1.1e-05	2.7e-06



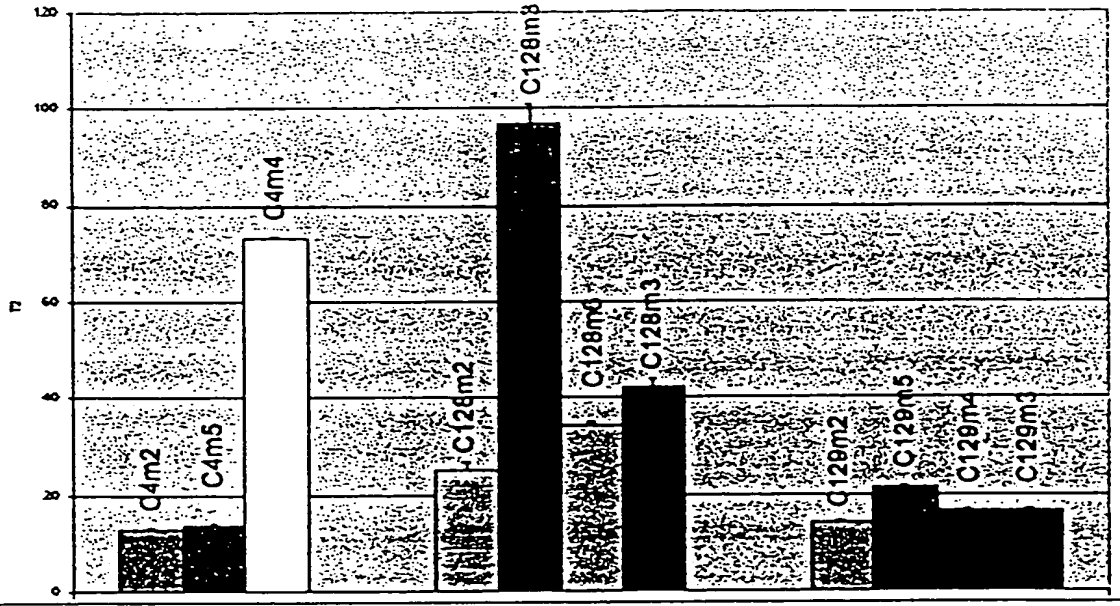
ongg752-757-3

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 16. Automated output of histograms for C129 mask 3

09809/0046051



Comparison of T_2 and M_{sat}/M_0 cartilage, bone, matrix and synovium

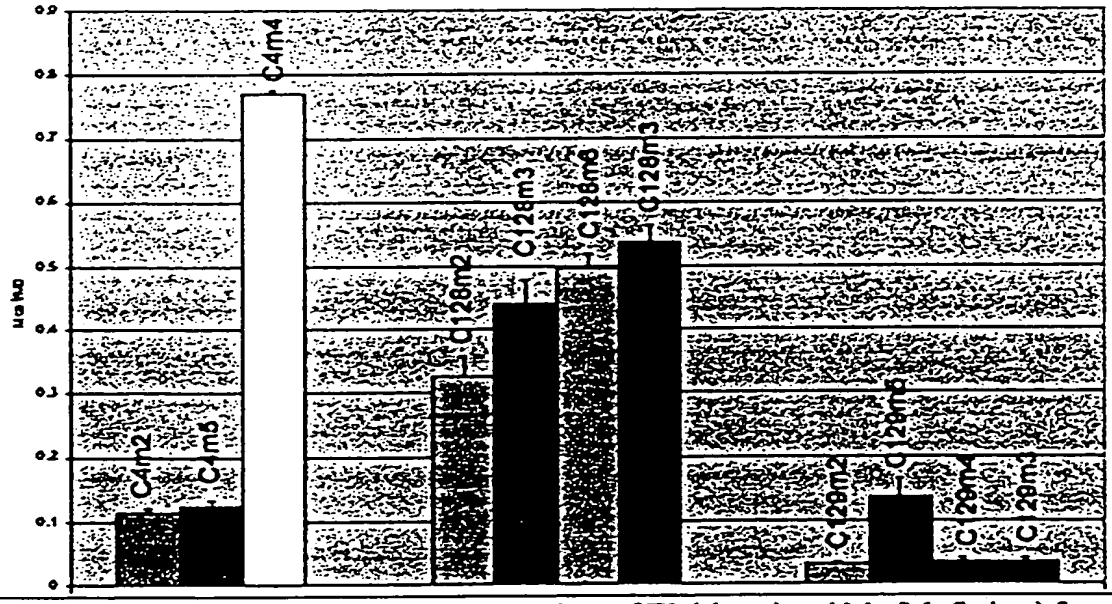
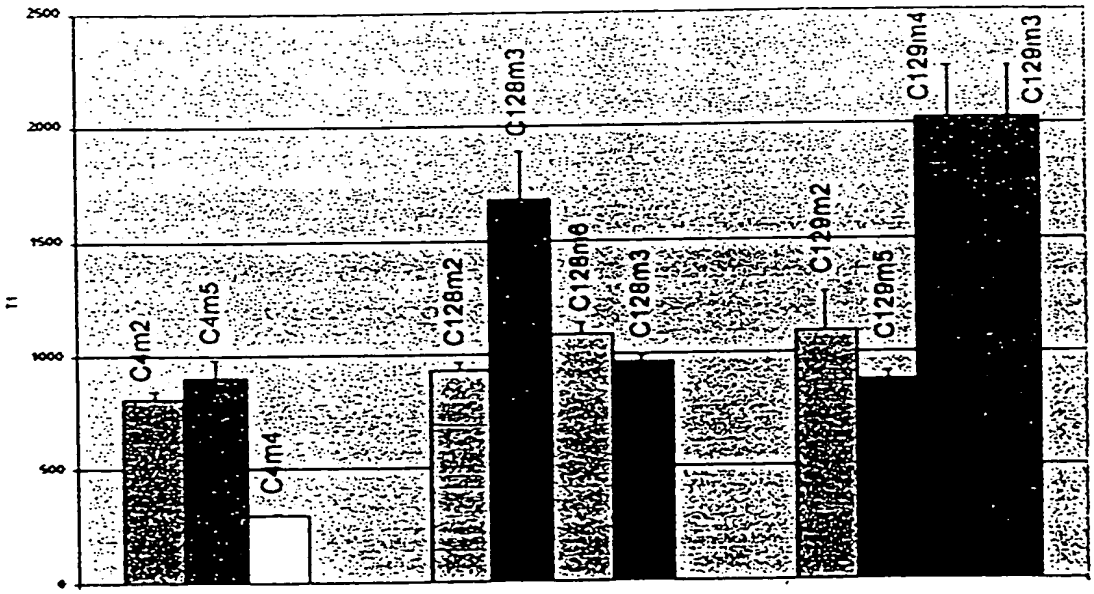


Figure SRL 17a. Graphs comparing mean values of T2 (above) and M_{sat}/M_0 (below) for ACD1 defects C128 and C129 with the unoperated control, C4

T0507h0-070828b0



Comparison of T_1 and ADC for cartilage, bone, and synovium

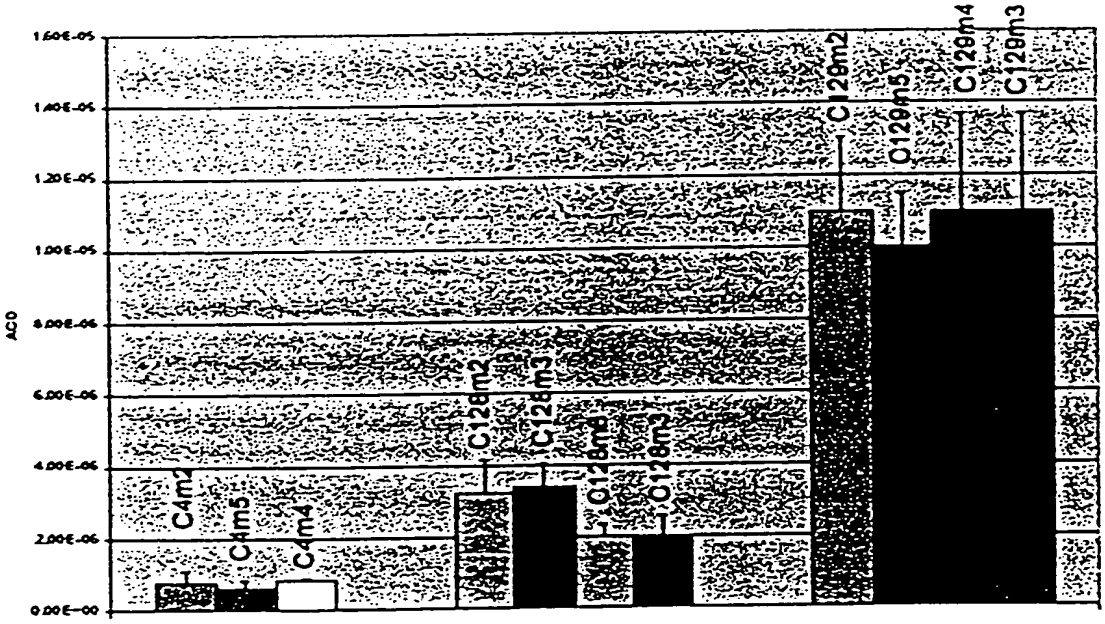
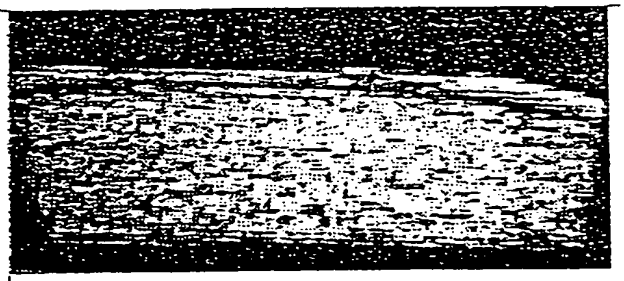


Figure SRL 17b. . Graphs comparing mean values of T_1 (above) and ADC (below) for ACD1 defects C128 and C129 with the unoperated control, C4

EL504040702US

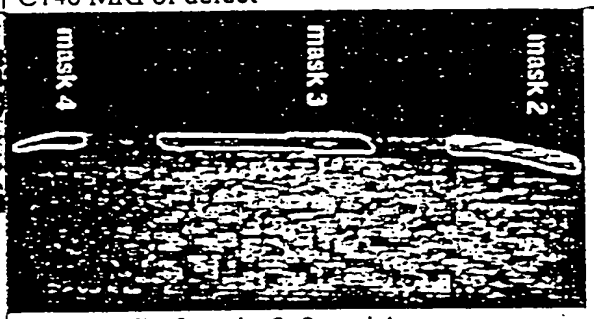
C146 (ACD1 ÷ HAED, vital flap) 8 weeks

C146 Histology of defect



C146 MRI of defect

Histology detail of mask 3



MRI detail of masks 2, 3, and 4

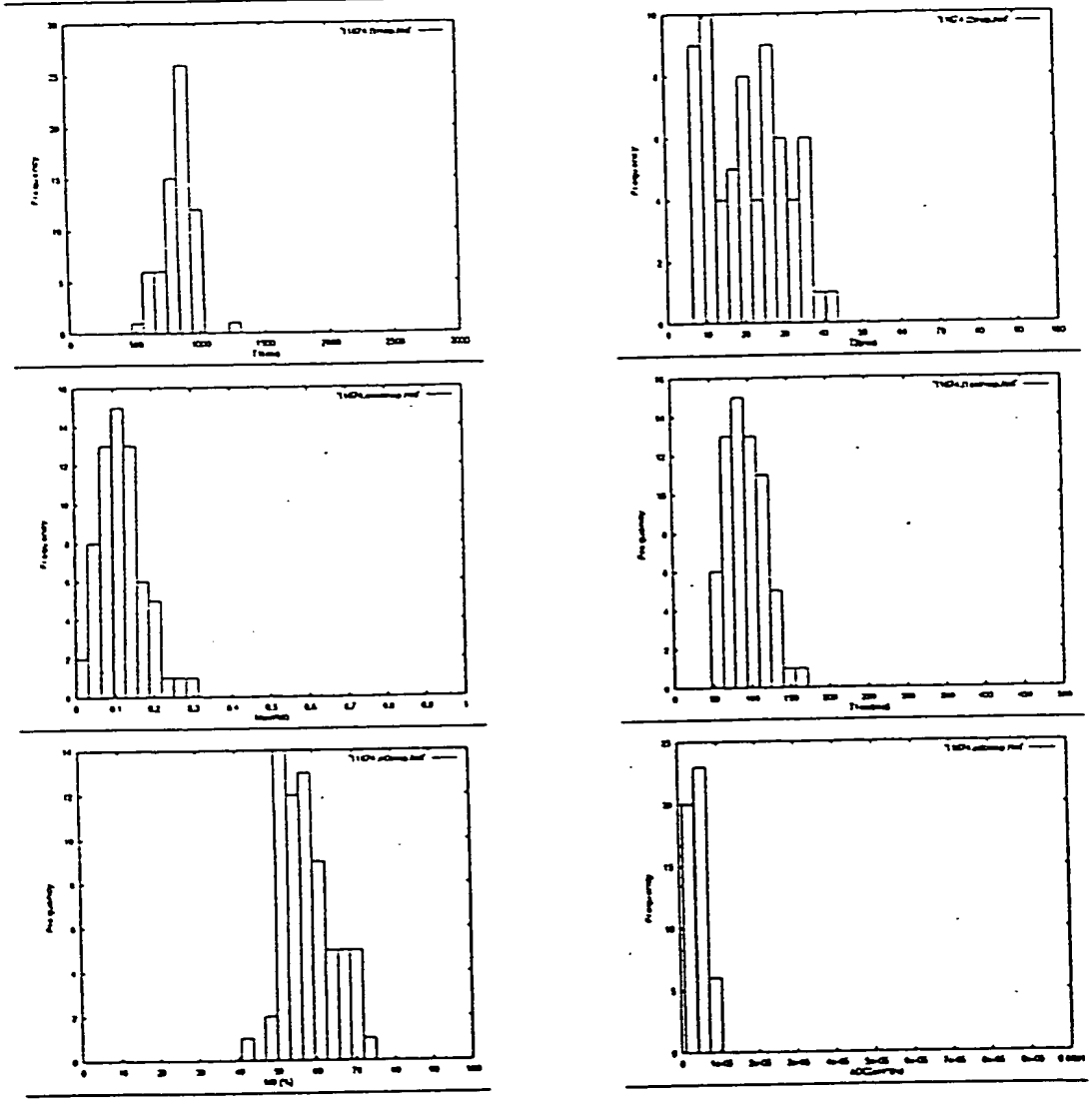
Histology detail of mask 2

Figure SRL 18
C146 (ACD1 ÷ HAED, vital flap) 8 weeks
Histology and MRI showing detail of masks 2, 3 and 4.

LEGAL-DOCS 0708360

C146 qMRI values for mask 2, adjacent cartilage

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	60.0	0.8	Msat/M0	0.124	0.007
T1(ms)	873	15	T1sat(ms)	97	3
T2(ms)	22.1	1.2	ADC(cm2/s)	4.3e-06	3.4e-07



ongg1046-1051-2

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

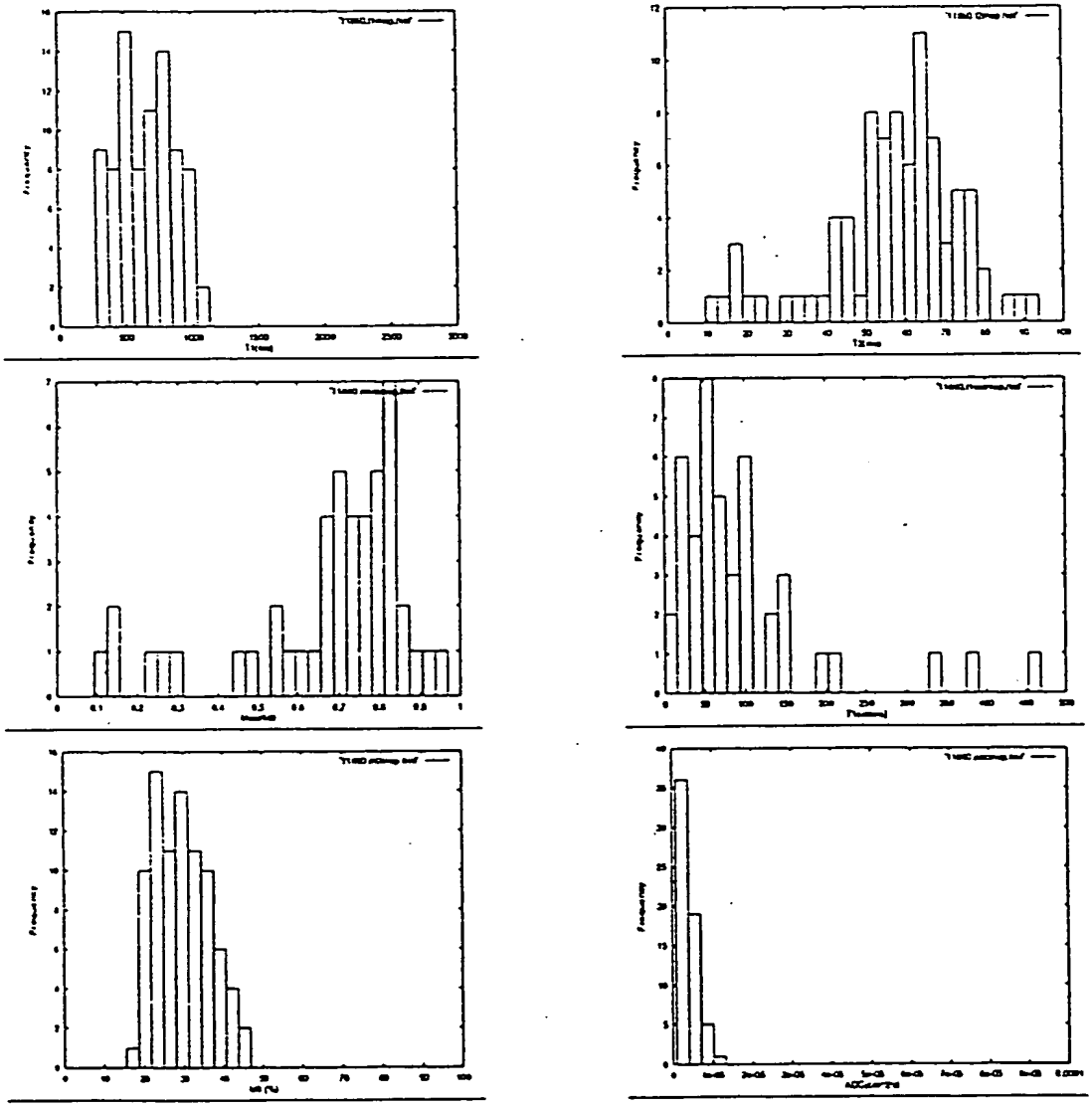
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 19. Automated output of histograms for C146 mask 2

Express Mail No. EV 339 150 880 US

C146 qMRI values for mask 3, repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	30.6	0.8	Msat/M0	0.692	0.032
T1(ms)	688	24	T1sat(ms)	119	19
T2(ms)	58.9	1.9	ADC(cm2/s)	3.6e-06	3e-07



ongg1046-1051-3

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 20. Automated output of histograms for C146 mask 3

10504040 "0/08/2006

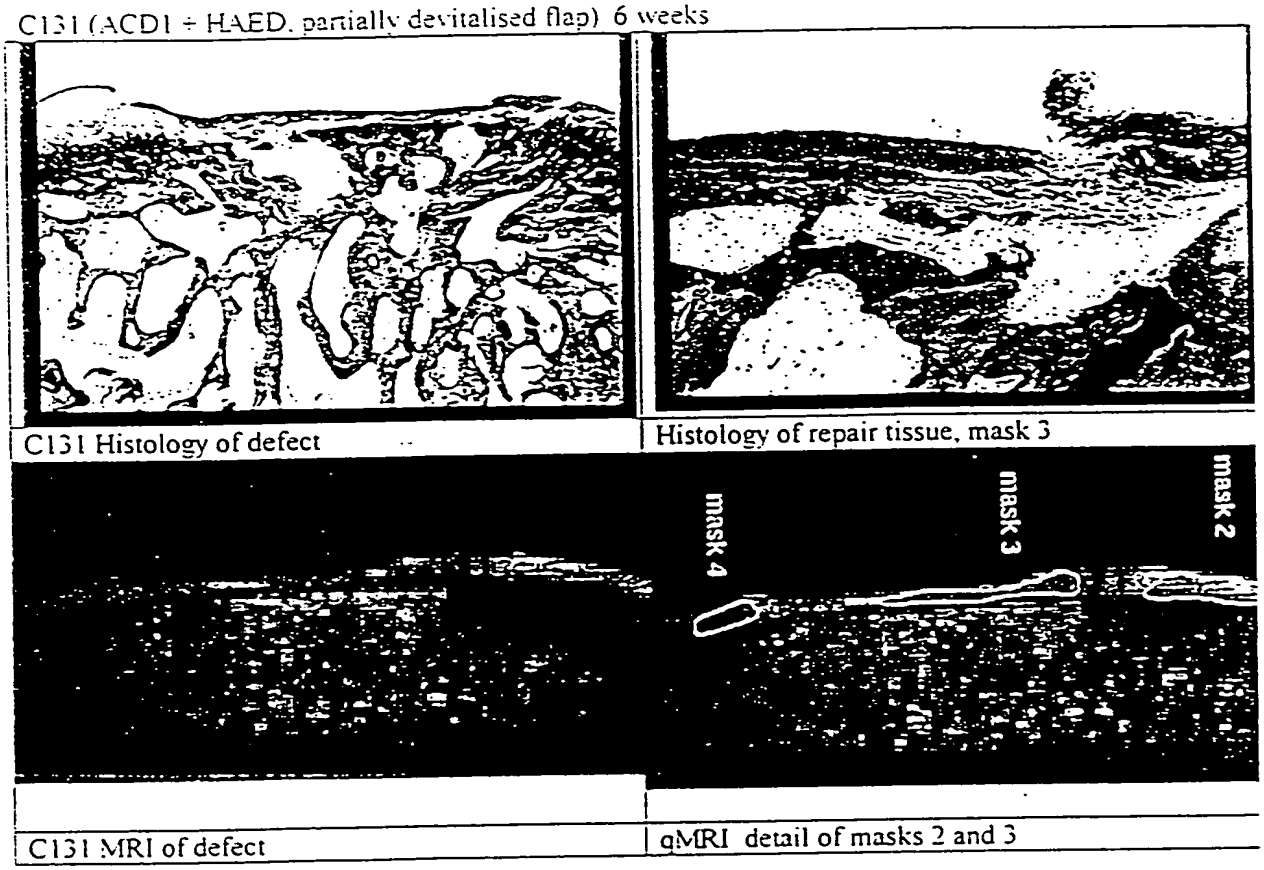
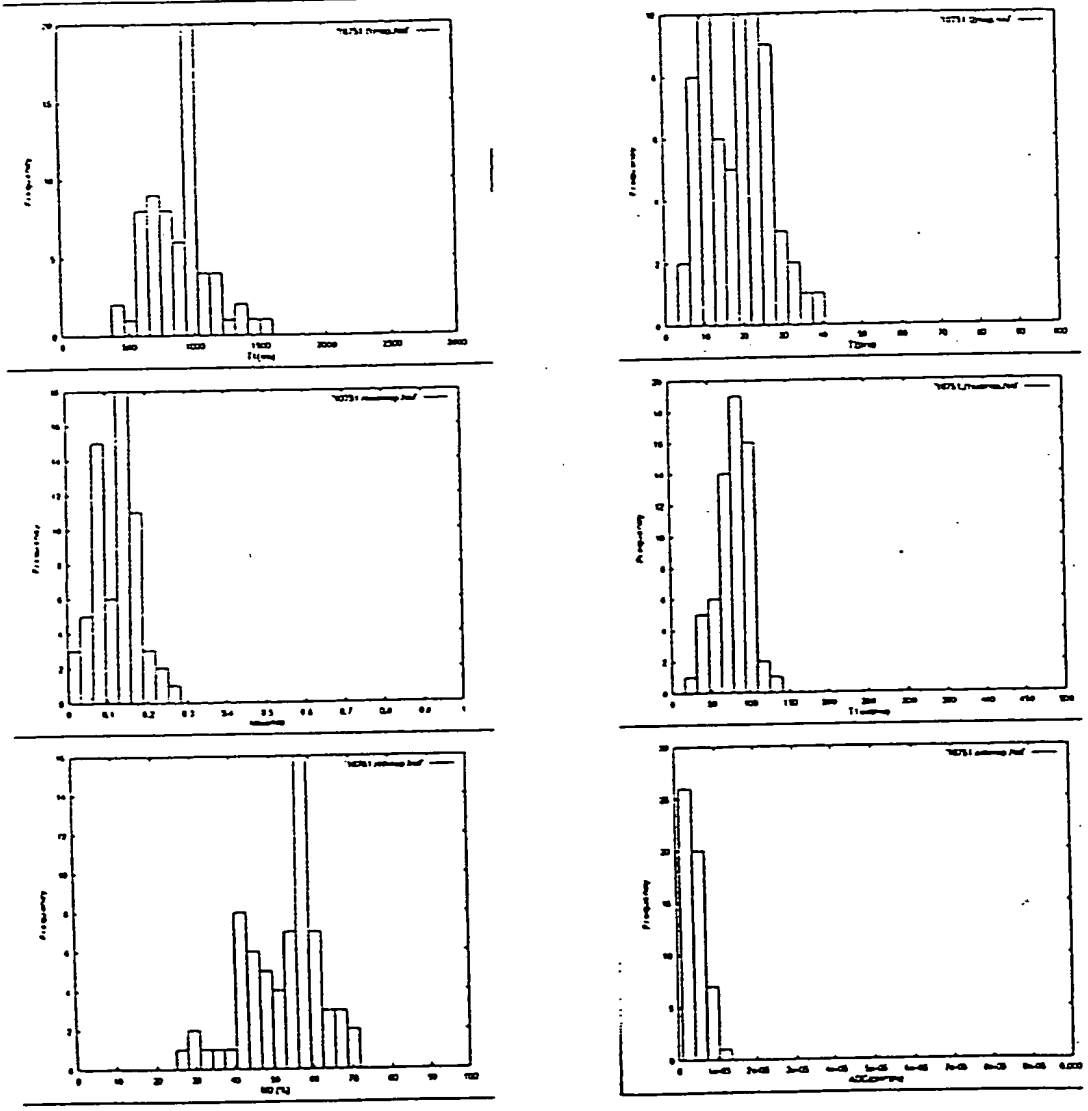


Figure SRL 21
C131 (ACD1 + HAED,partially devitalised flap) 6 weeks
Histology and MRI showing detail of masks 2 and 3.

TOSCO-07080501

C131 qMRI values for mask 2. cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	54.2	1.2	Msat/M0	0.129	0.007
T1(ms)	930	29	T1sat(ms)	84	3
T2(ms)	19.8	1.0	ADC(cm2/s)	4.3e-06	3.3e-07



ongg-598-603-2

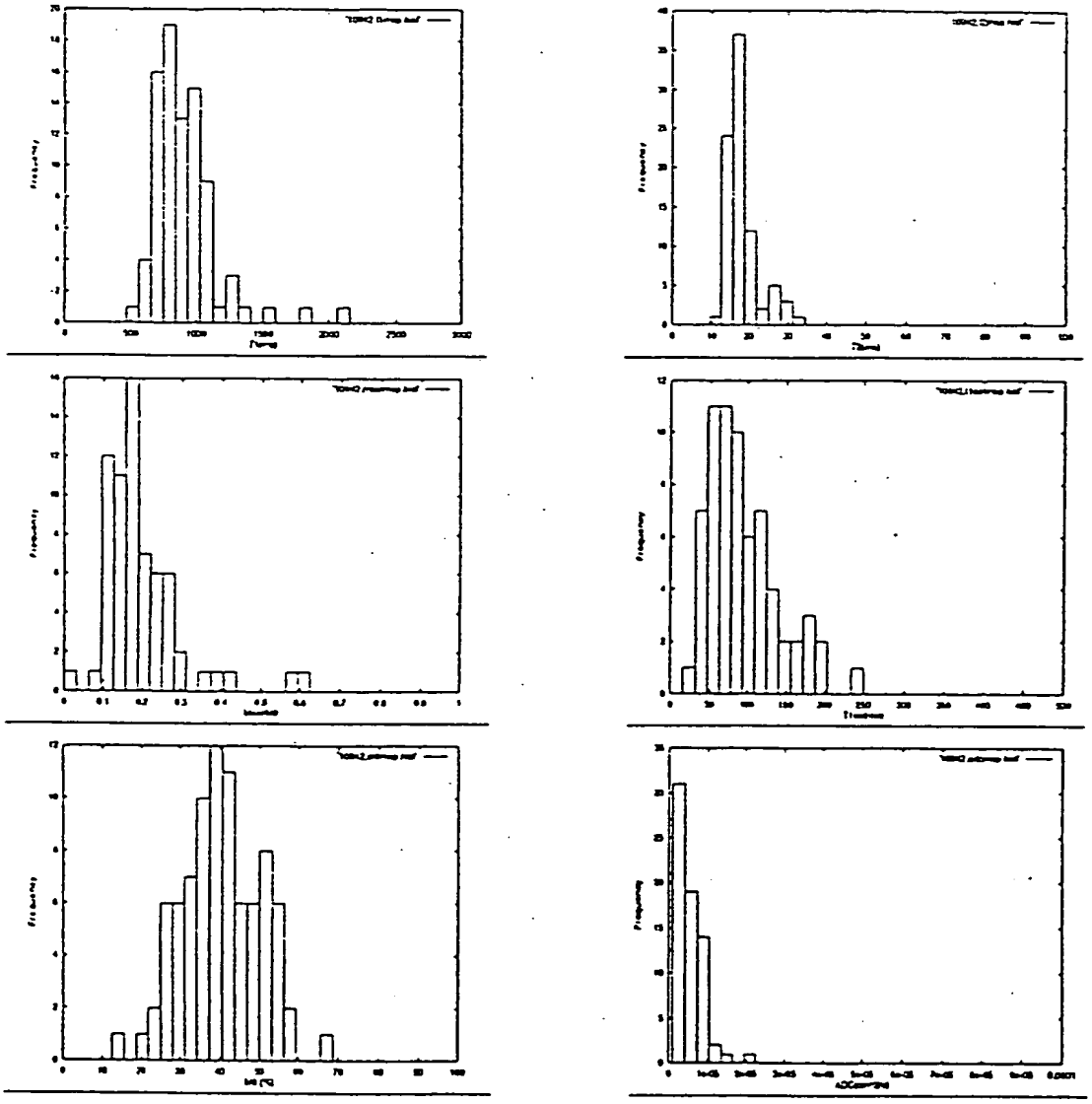
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 22. Automated output of histograms for C131 mask 2

Express Mail Label No. EV 045082850

C131 qMRI values for mask 3, repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	41.7	1.1	Msat/M0	0.202	0.013
T1(ms)	936	28	T1sat(ms)	97	6
T2(ms)	18.6	0.5	ADC(cm2/s)	5.3e-06	4.3e-07



ongg 598-603-3

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 23. Automated output of histograms for C131 mask 3

FP5070-0702868-0

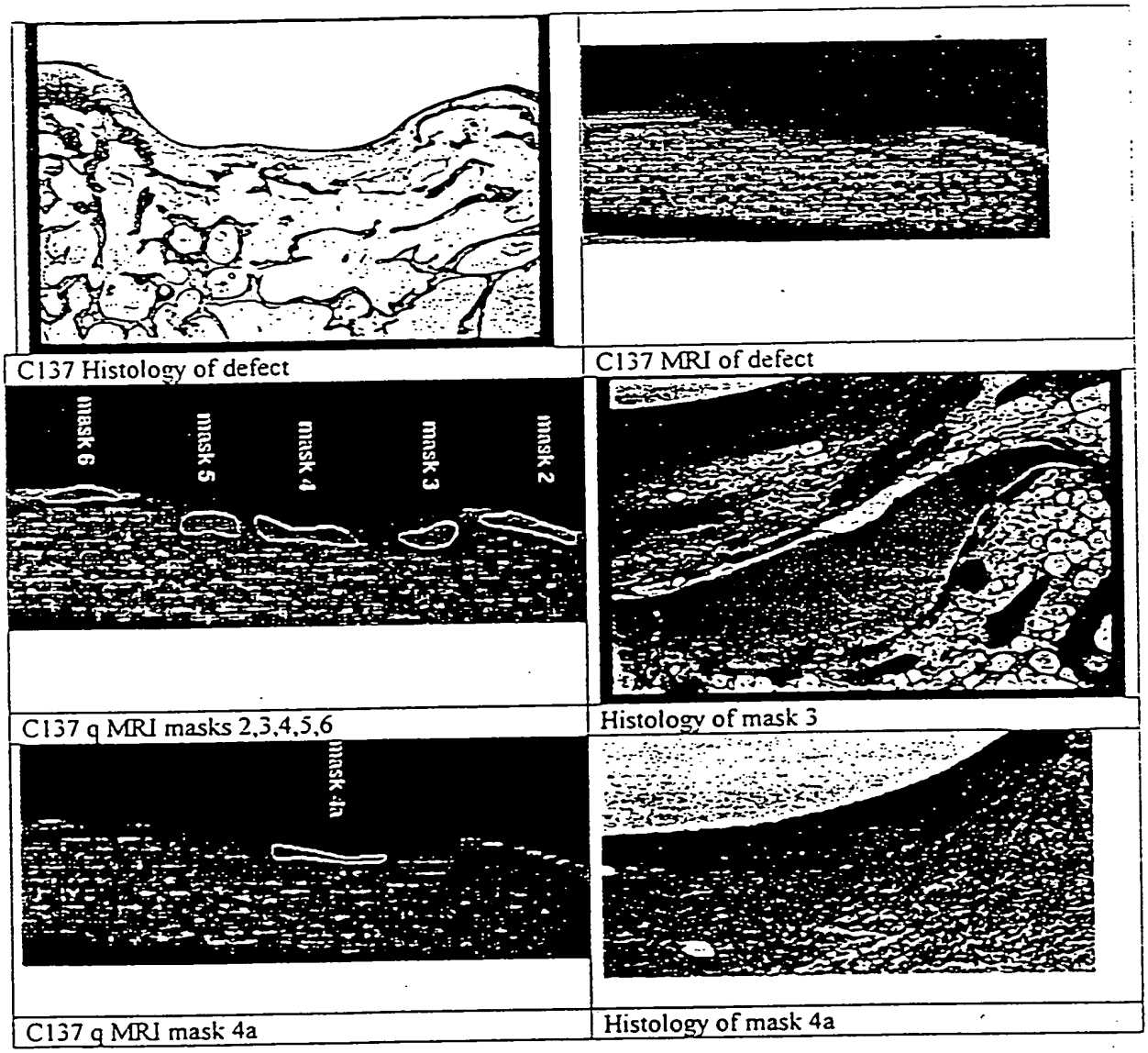


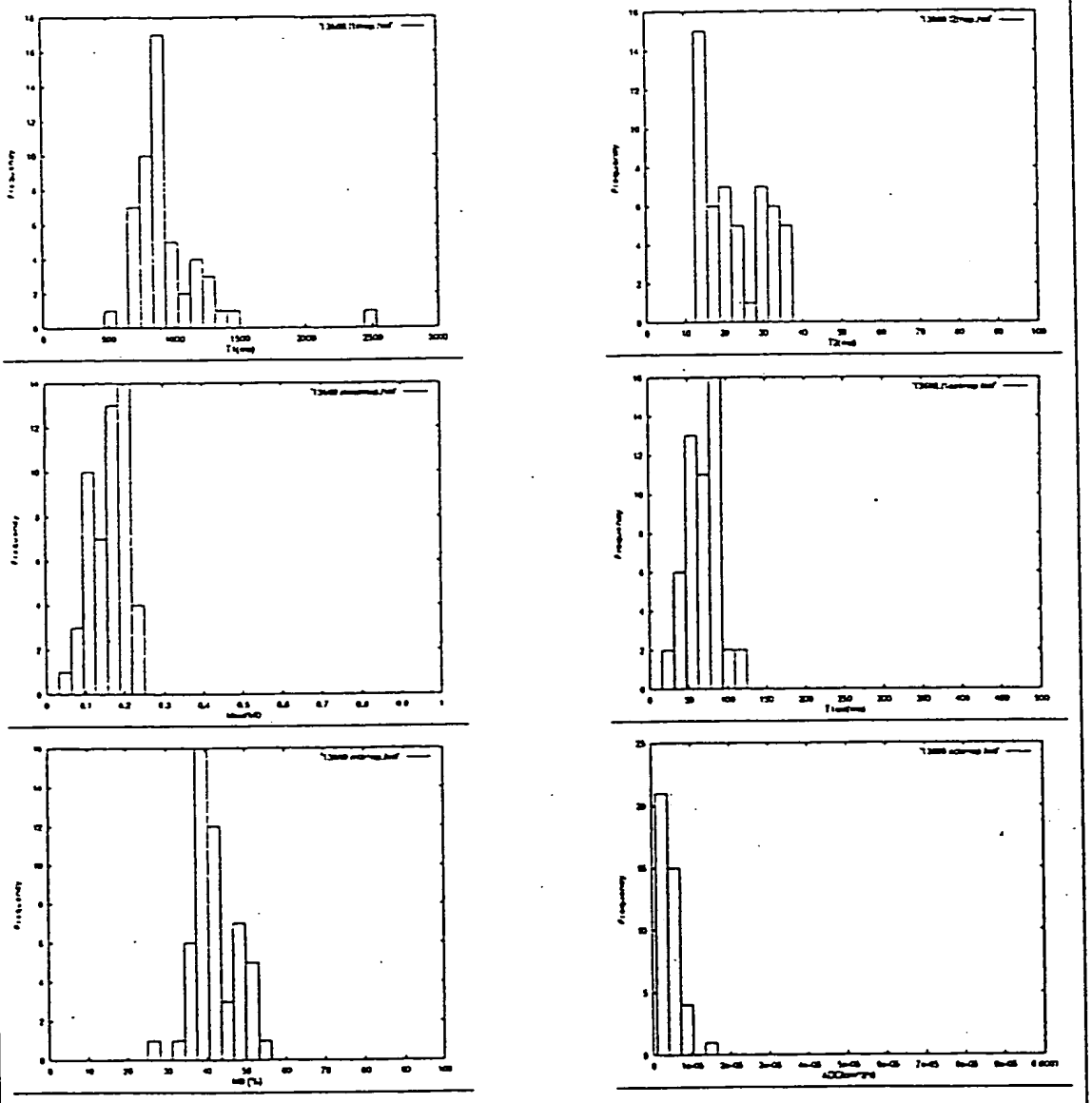
Figure SRL 24.
C137 (virtual ACD1 + PEG Triacrylate, partially devitalised flap) 10 weeks
Histology and MRI showing detail of masks 2, 3, 4, 4a, 5 and 6.

Confidential, Proprietary Information of

P-2004-0405-US-0980807

C137 mask 2, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	43.6	0.8	Msat/M0	0.167	0.007
T1(ms)	982	40	T1sat(ms)	72	3
T2(ms)	23.6	1.1	ADC(cm2/s)	4.3e-06	4.2e-07



ongg 941-946-2

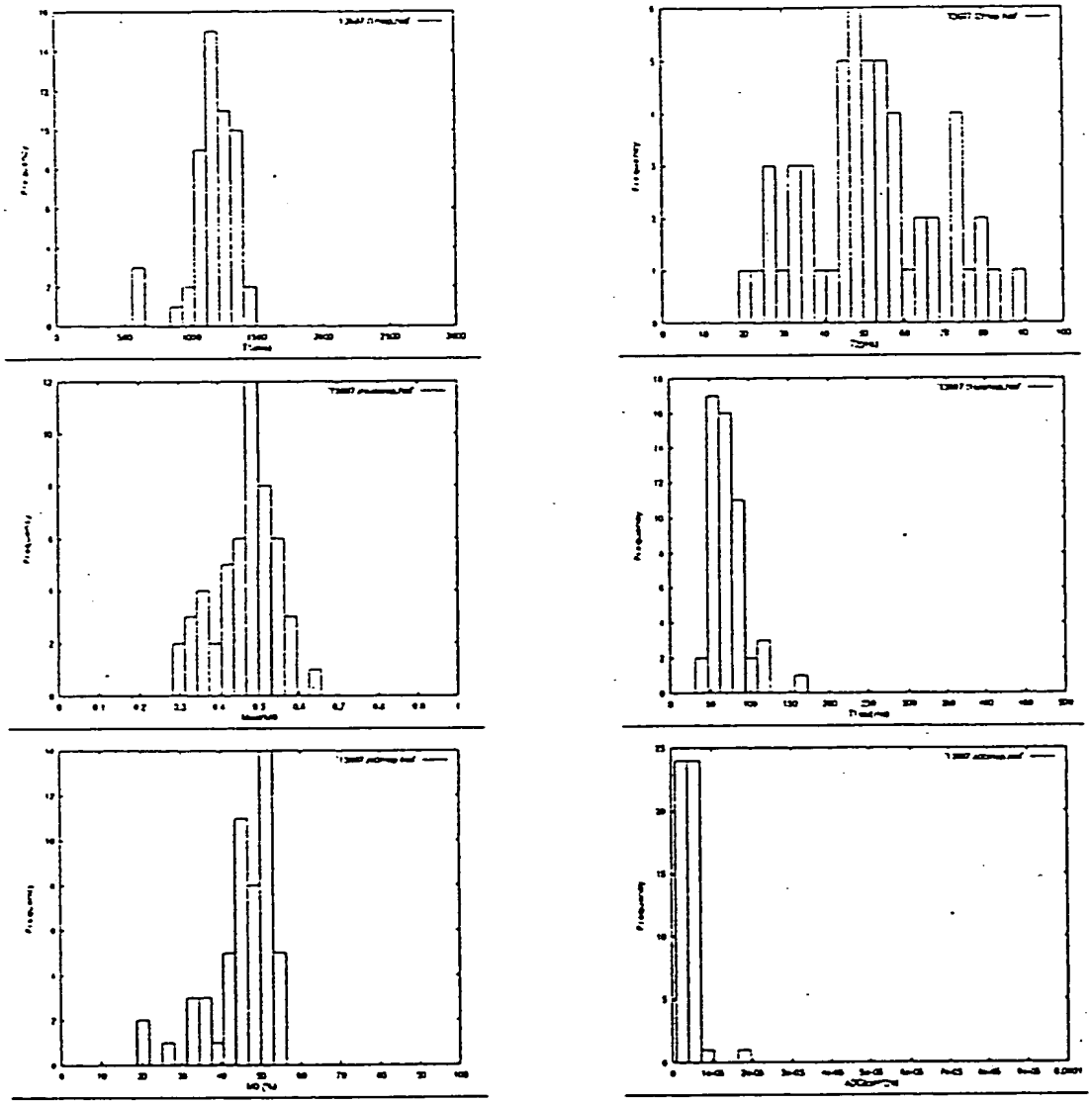
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 25. Automated output of histograms for C137 mask 2

10509464 - 042808

C137 mask 3, retained matrix

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	46.8	1.1	Msat/M0	0.430	0.011
T1(ms)	1219	26	T1sat(ms)	75	3
T2(ms)	53.4	2.3	ADC(cm2/s)	4.5e-06	3.7e-07



ongg 941-946-3

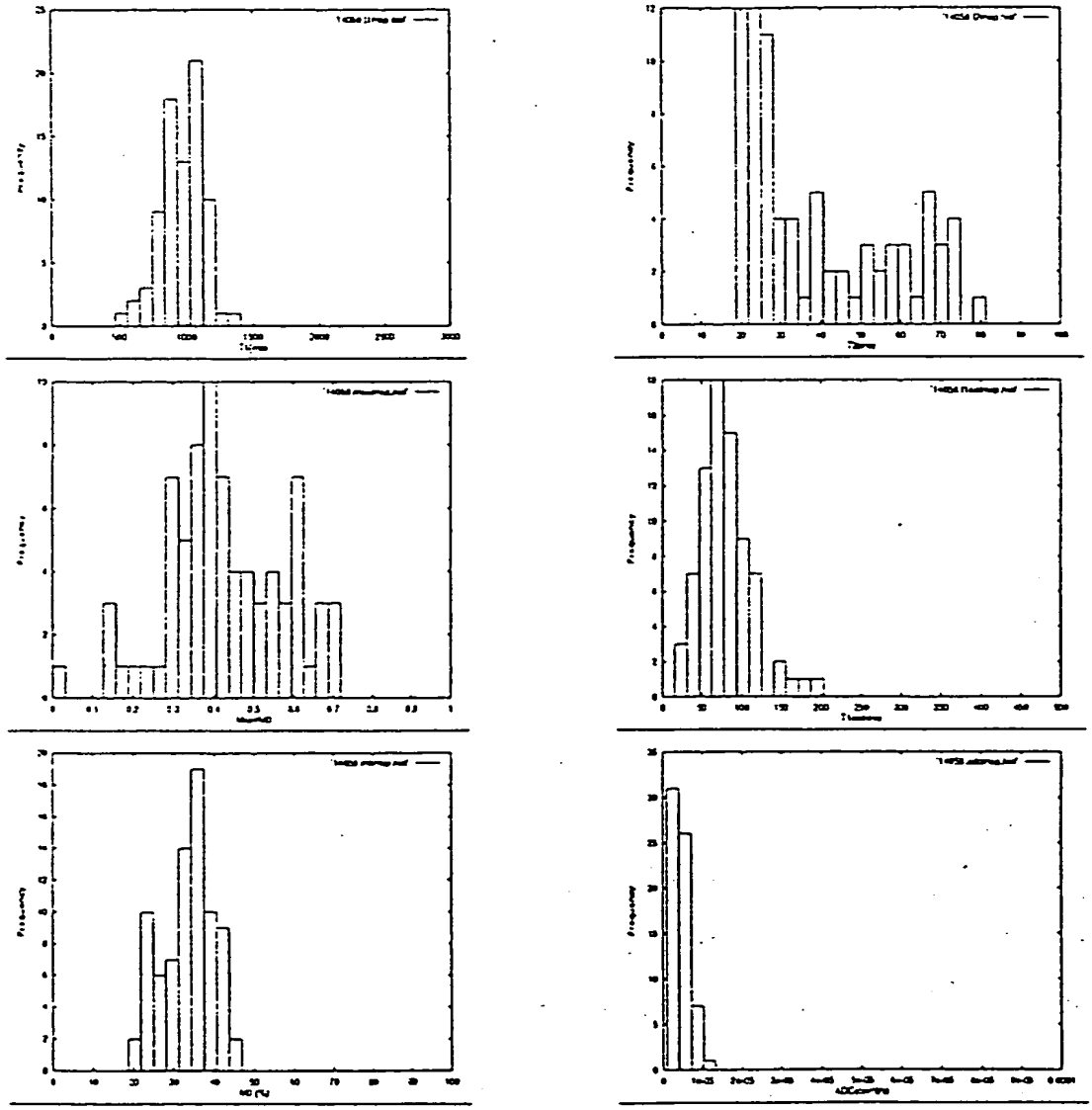
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 26. Automated output of histograms for C137 mask 3

T-950 P.004/070 F-650

C137 mask 4, lower repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	34.8	0.7	Msat/M0	0.443	0.017
T1(ms)	1009	18	T1sat(ms)	83	4
T2(ms)	40.9	2.2	ADC(cm2/s)	4.4e-06	3e-07



ongg 941-946-4

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

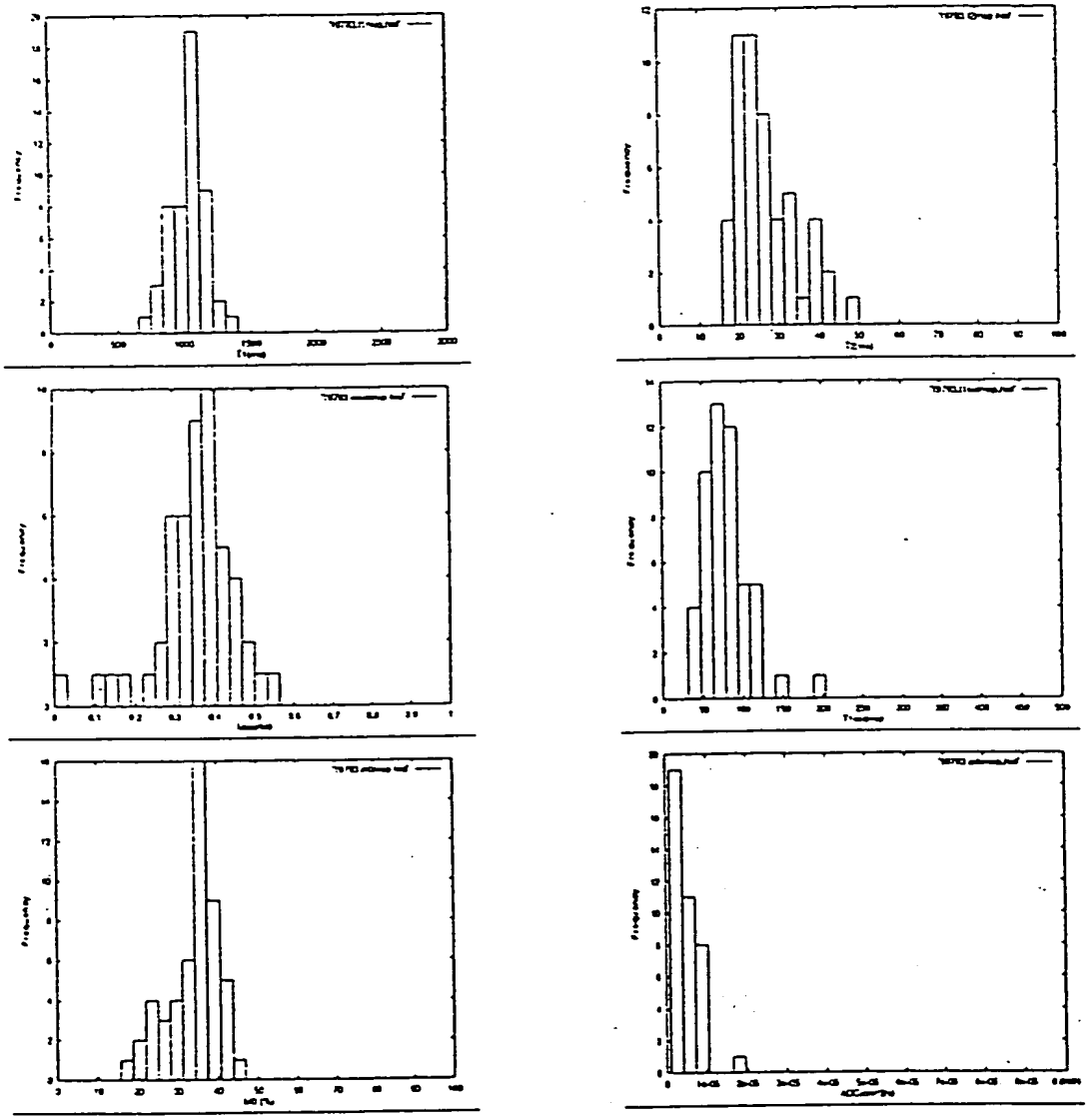
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 27. Automated output of histograms for C137 mask 4

Patent Application Publication

C137 mask 4a, upper repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	35.4	0.9	Msat/M0	0.365	0.014
T1(ms)	1080	19	T1sat(ms)	83	4
T2(ms)	27.7	1.1	ADC(cm2/s)	5e-06	5.2e-07



ongg 941-946-4a

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

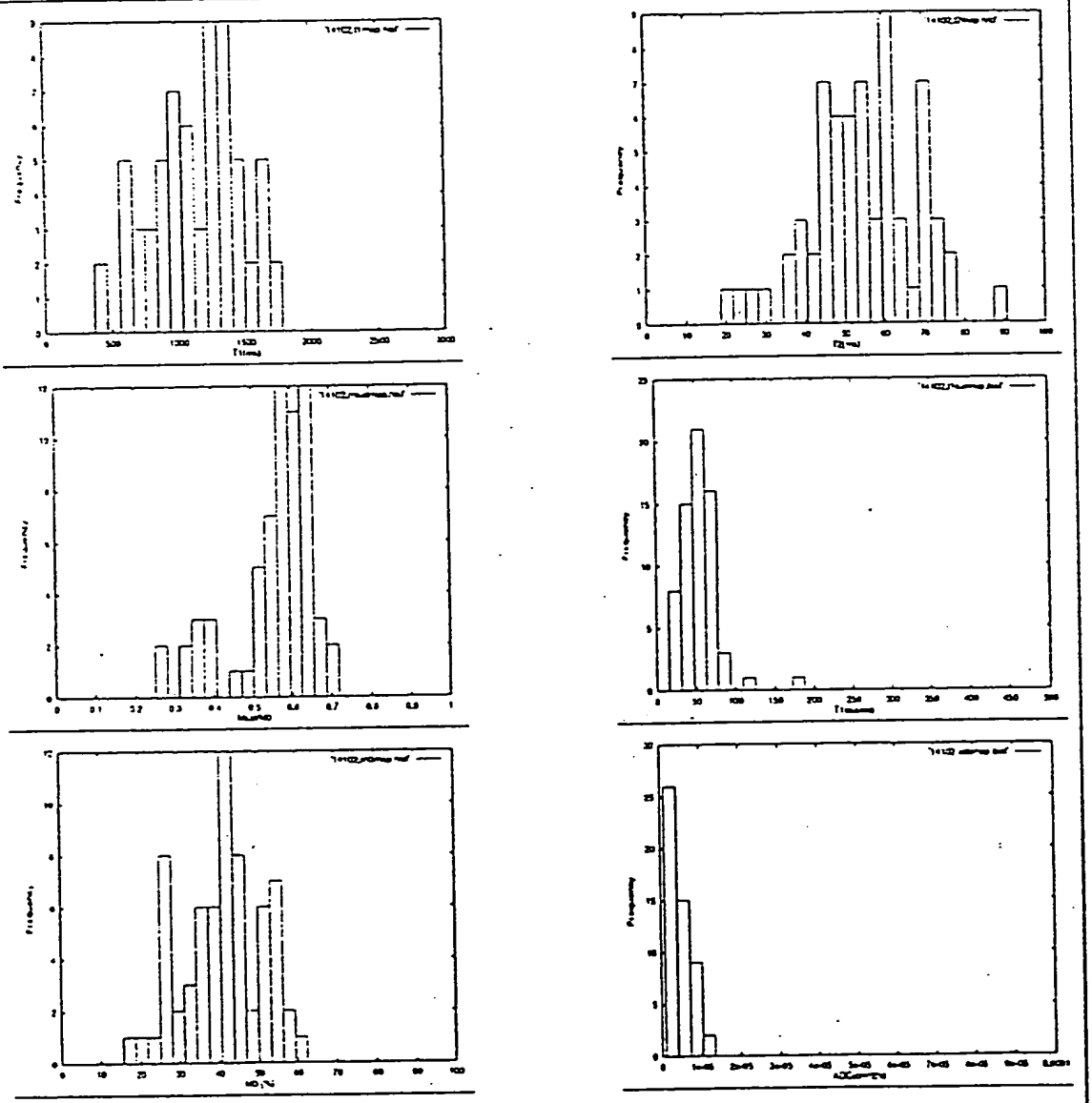
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 28. Automated output of histograms for C137 mask 4a

1-1507410-0.0.26.2.950

C137 mask 5, retained matrix

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	42.7	1.3	Msat/M0	0.576	0.014
T1(ms)	1173	42	T1sat(ms)	57	3
T2(ms)	56.4	1.7	ADC(cm2/s)	4.5e-06	3.7e-07



ongg 941-946-5

x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 29. Automated output of histograms for C137 mask 5

T05870 "02088860

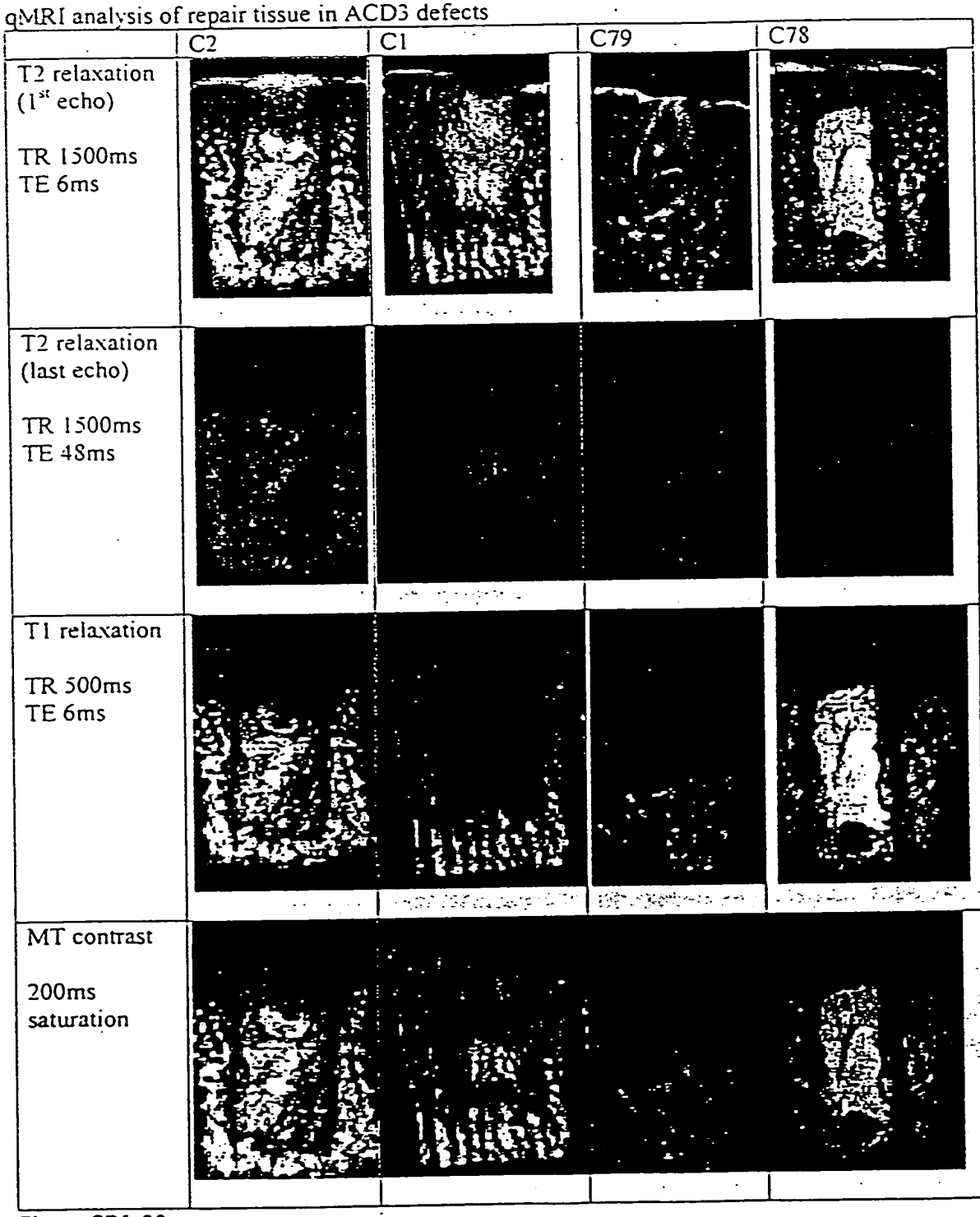


Figure SRL 30.
Selected MR scans from qMRI analysis of spontaneously healed ACD3 defects C1, C2 at 8 weeks and C78, C79 at 6 months.

EXHIBIT 2007

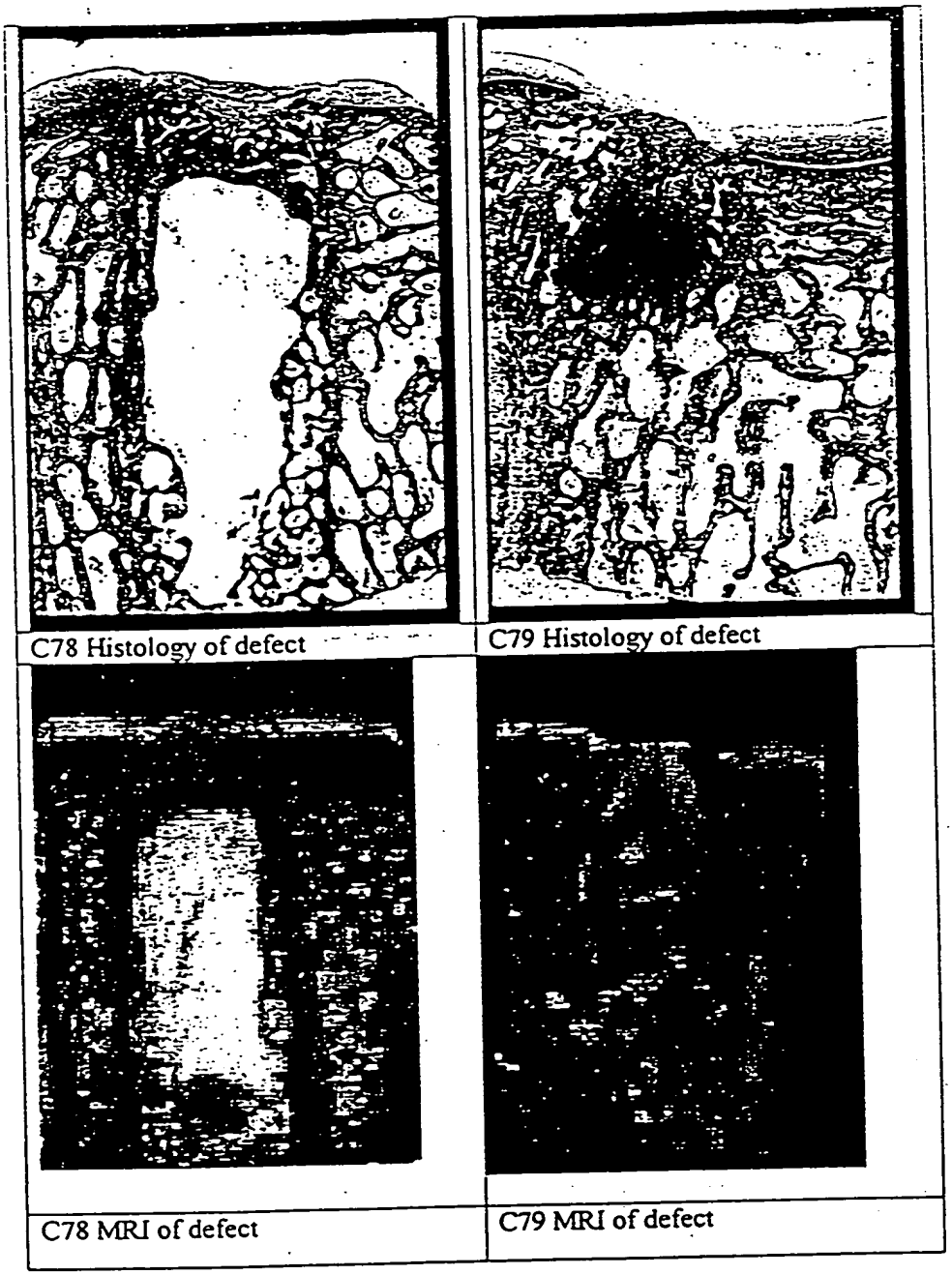


Figure SRL 31
Histology and MRI of spontaneously healed ACD3 defects C78 and C79 at 6 months

10509-0076000

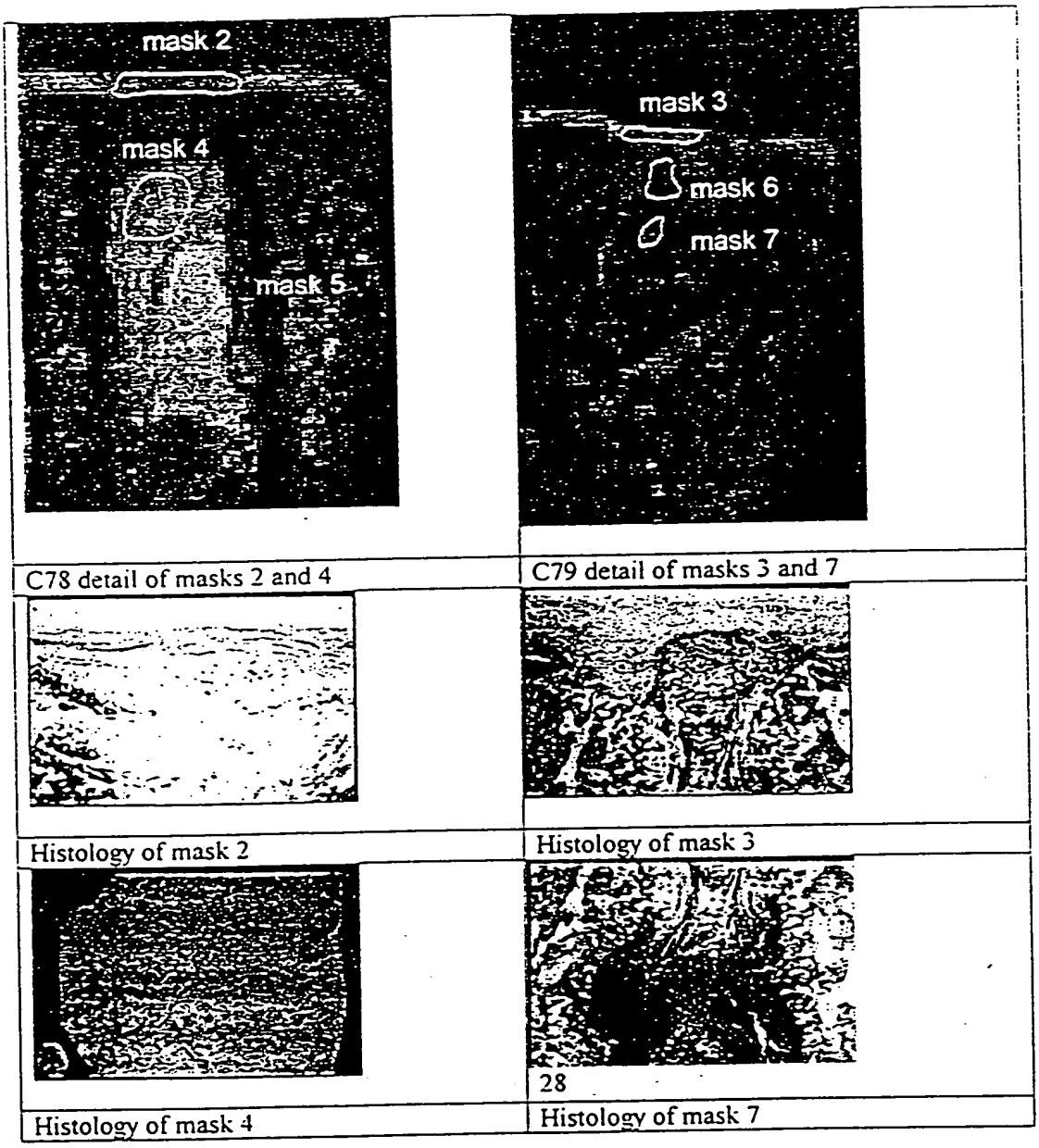


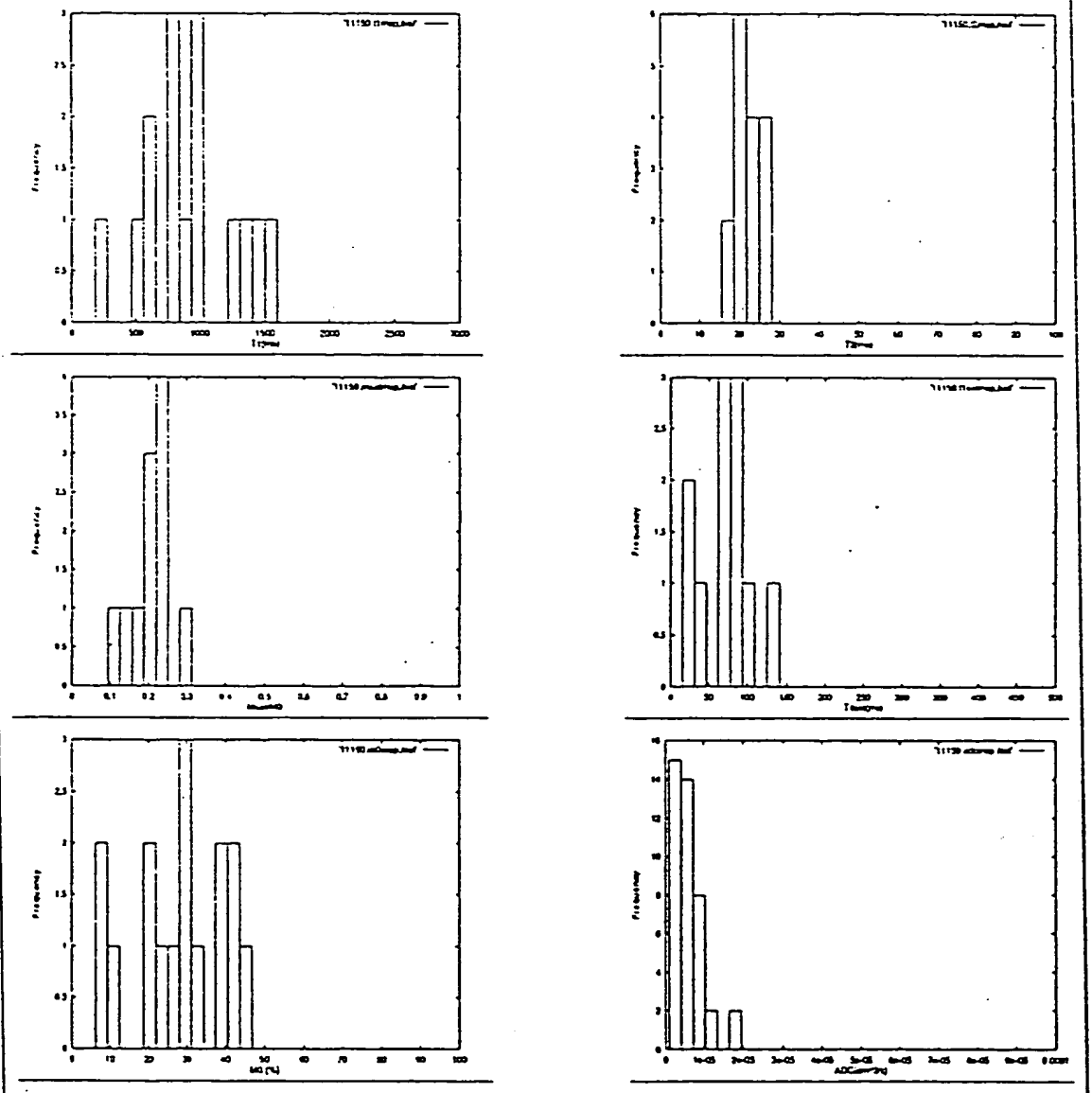
Figure SRL 32
Histology and MRI showing detail of masks 2, 4, 3 and 7 for C78 and C79

Confidential. Proprietary Information of

Patent - 07088640

C78 qMRI values for mask 2, repair tissue in cartilage compartment

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	28.6	3.2	Msat/M0	0.215	0.016
T1(ms)	1095	159	T1sat(ms)	75	10
T2(ms)	23.0	0.8	ADC(cm2/s)	1.4e-05	8.1e-06



ongg 0004-0009-2

x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS top T2,mid T1sat,bottom ADC

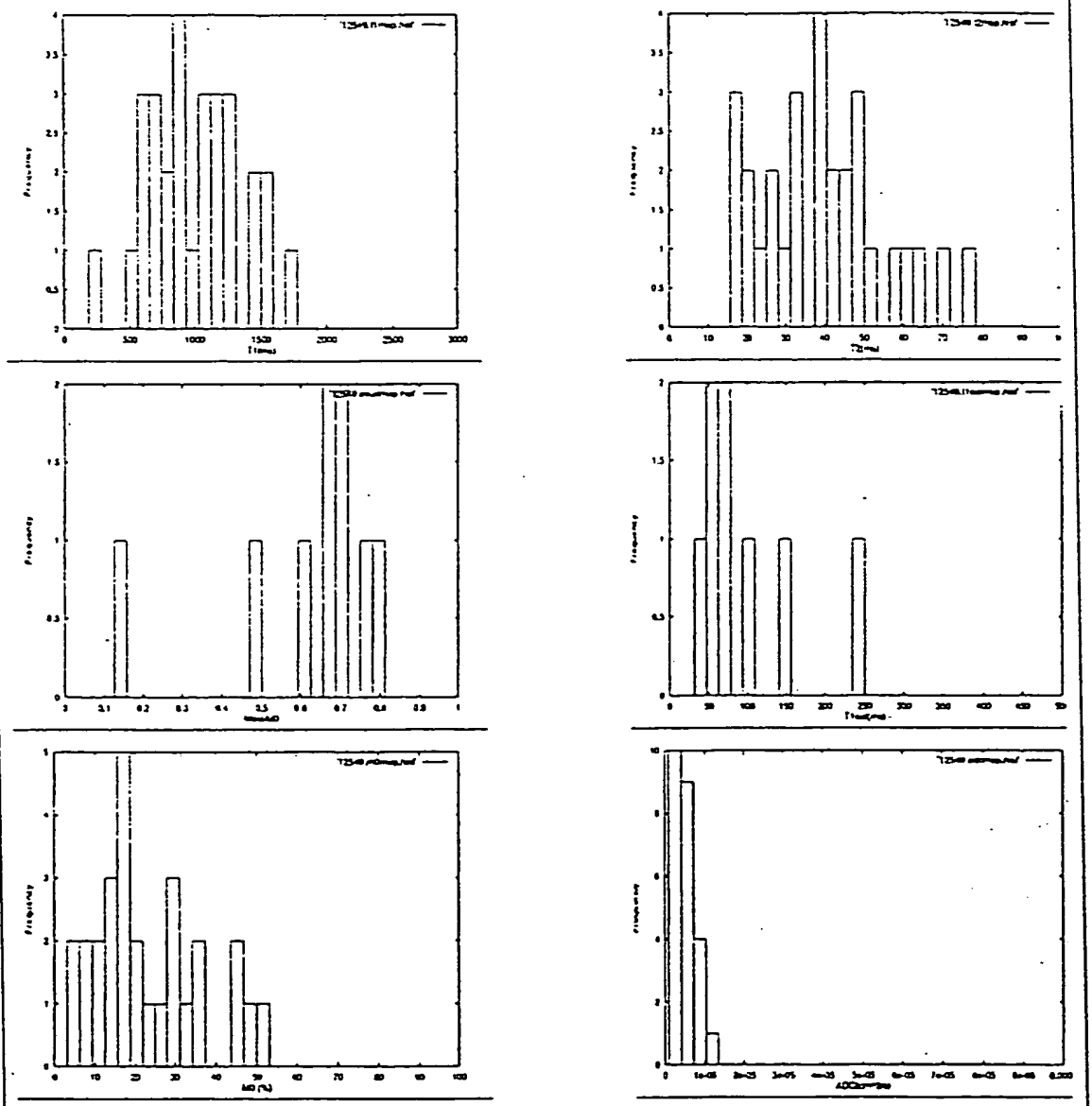
Figure SRL 33 Automated output of histograms for C78 mask 2

Patent Application Serial No. 10/538,859

PO50h0" 0208360

C78 qMRI values for mask 4, repair tissue in bone compartment

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	24.0	2.6	Msat/M0	0.641	0.069
T1(ms)	1034	68	T1sat(ms)	101	24
T2(ms)	41.0	3.1	ADC(cm2/s)	5.1e-06	5.8e-07



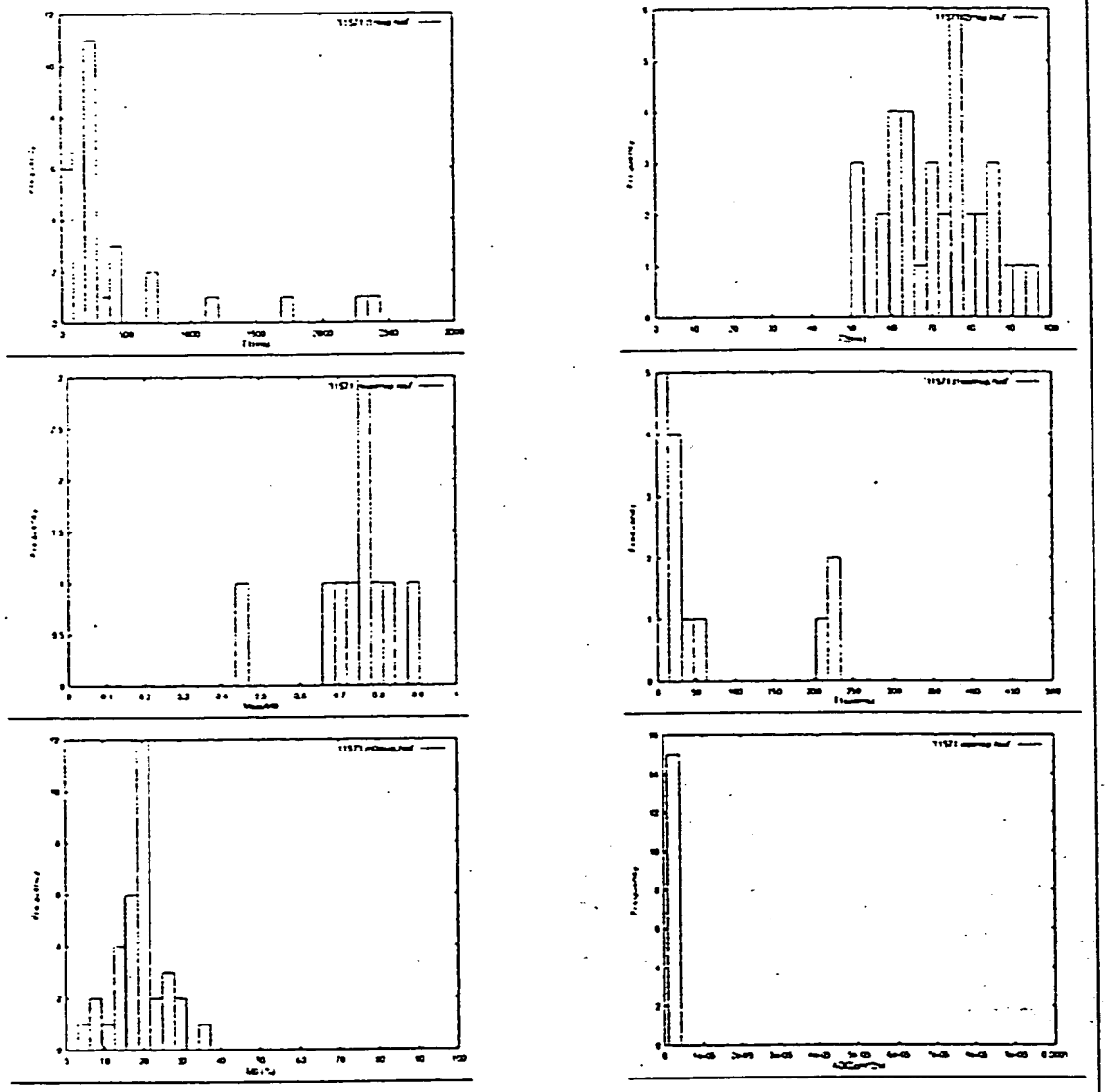
ongg 0004-0009-4

x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS top T2,mid T1sat,bottom ADC

Figure SRL 34 Automated output of histograms for C78 mask 4

C79 qMRI values for mask 3, repair tissue in cartilage compartment

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	20.1	1.2	Msat/M0	0.763	0.038
T1(ms)	427	106	T1sat(ms)	65	24
T2(ms)	75.8	2.6	ADC(cm2/s)	1.5e-06	1.9e-07



ongg 0004-0009-3

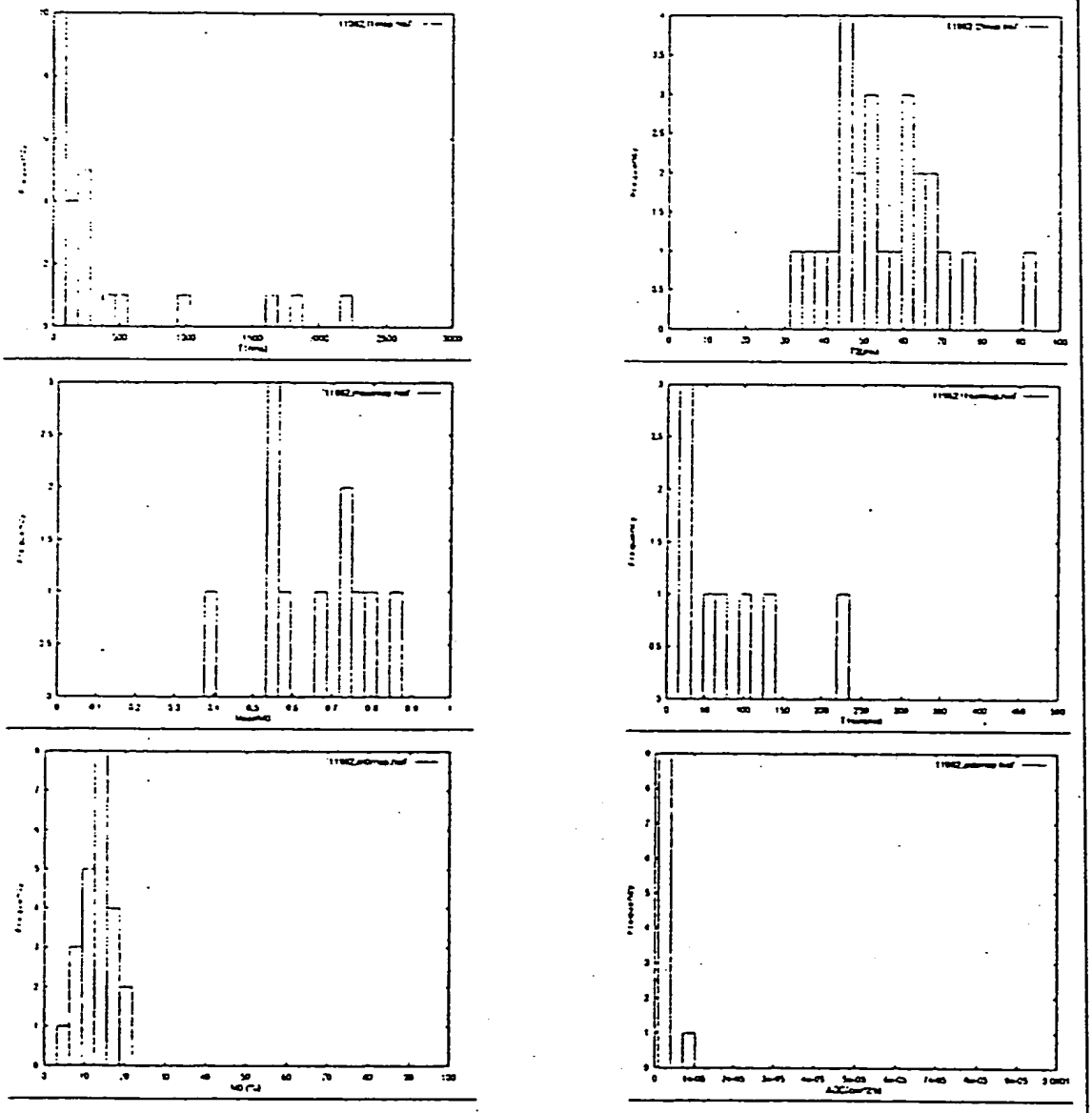
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS top T2,mid T1sat,bottom ADC

Figure SRL 35 Automated output of histograms for C79 mask 3

EXPRESS MAIL NO. EV 082886960

C79 qMRI values for mask 7, repair tissue in bone compartment

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	13.5	0.8	Msat/M0	0.674	0.042
T1(ms)	385	125	T1sat(ms)	62	20
T2(ms)	57.0	2.8	ADC(cm2/s)	2.1e-06	6.5e-07



ongg 0004-0009-7

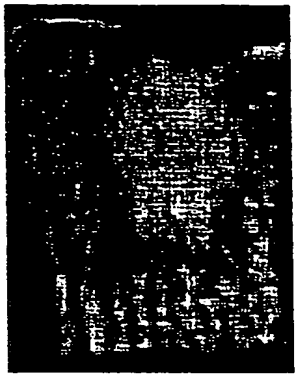
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS top T2,mid T1sat,bottom ADC

Figure SRL 36 Automated output of histograms for C79 mask 7

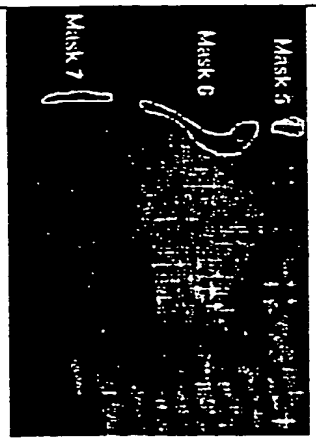
T0510h0 0/0828b0

EV504040208286SD

C1 Histology



C1 MRI



C1 detail of masks 5, 6 and 7

C2 Histology

C2 MRI

C2 detail of masks 2, 3 and 4

not available

C1 mask 6

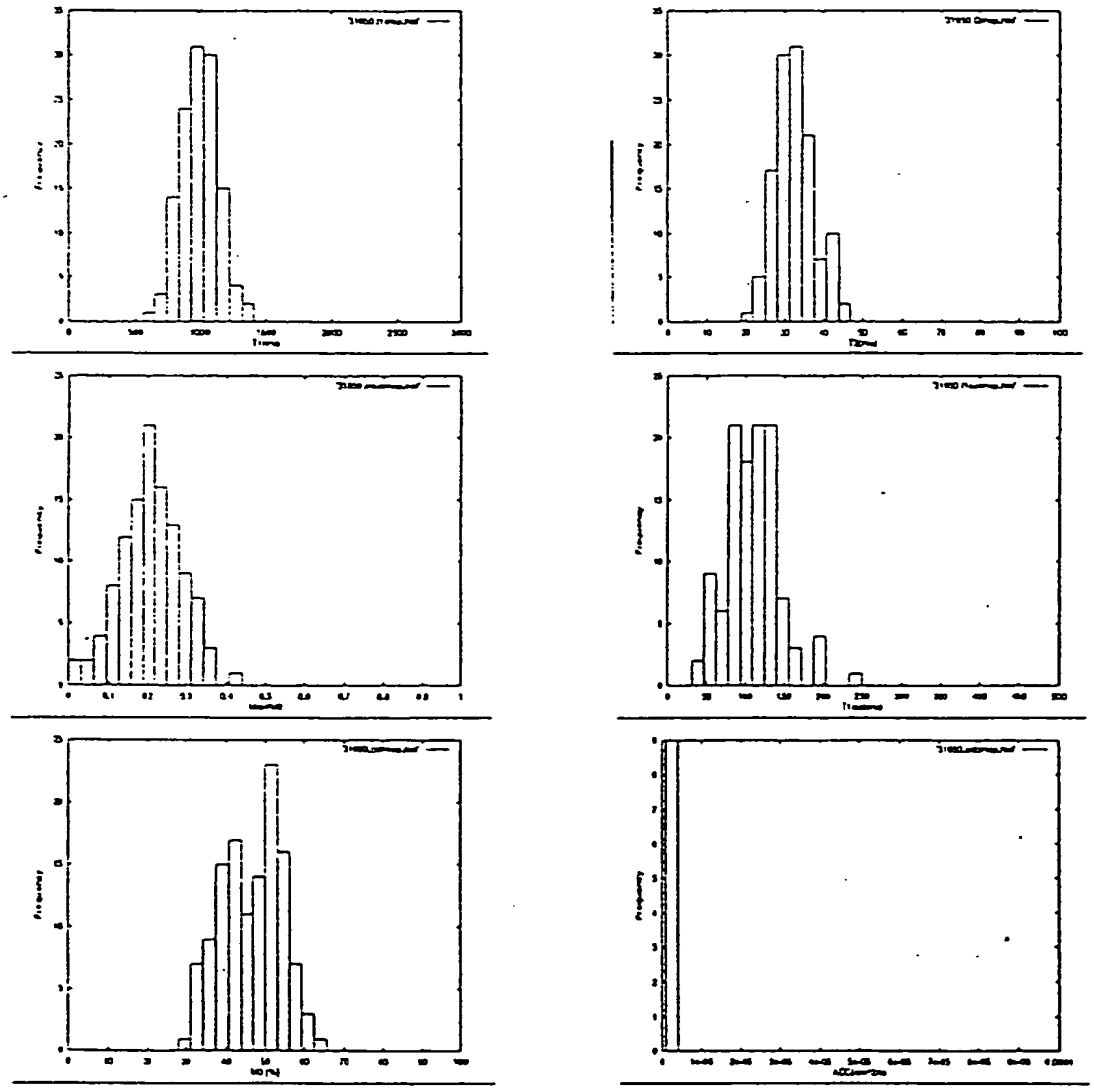
C2 mask 3

Figure SRL 37
Histology and MRI of spontaneously healed ACD3 defects C1 and C2 at 8 weeks

PCT/US04/008880

C2 mask 3. repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	48.0	0.7	Msat/M0	0.217	0.007
T1(ms)	1028	13	T1sat(ms)	113	3
T2(ms)	33.7	0.5	ADC(cm2/s)	1.7e-06	3.2e-07



ongg 3804-3809-3

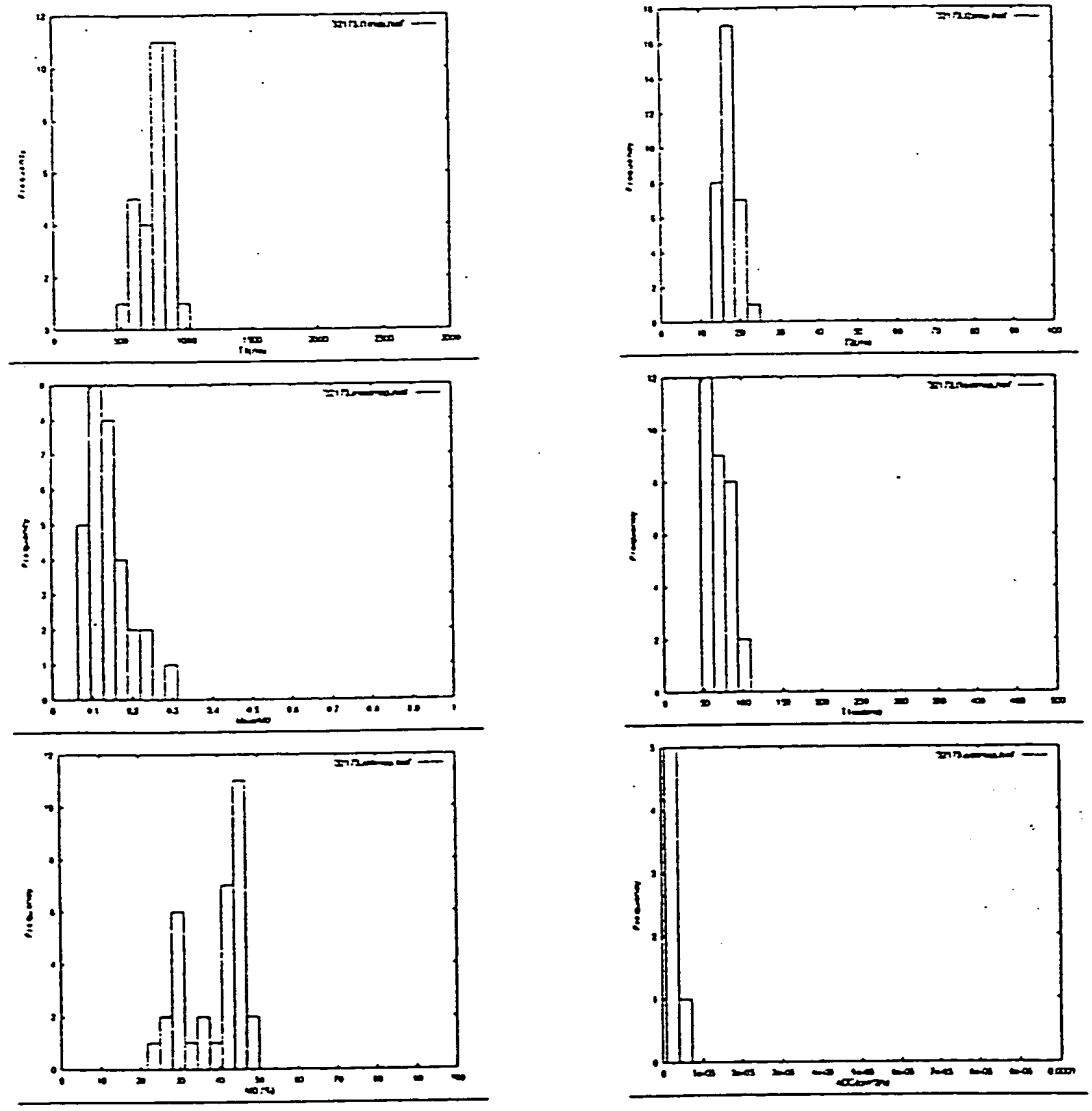
x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 38 Automated output of histograms for C2 mask 3

C2 mask 4, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	40.3	1.3	Msat/M0	0.144	0.009
T1(ms)	816	21	T1sat(ms)	71	3
T2(ms)	17.9	0.4	ADC(cm2/s)	1.9e-06	5.9e-07



ongg 3804-3809

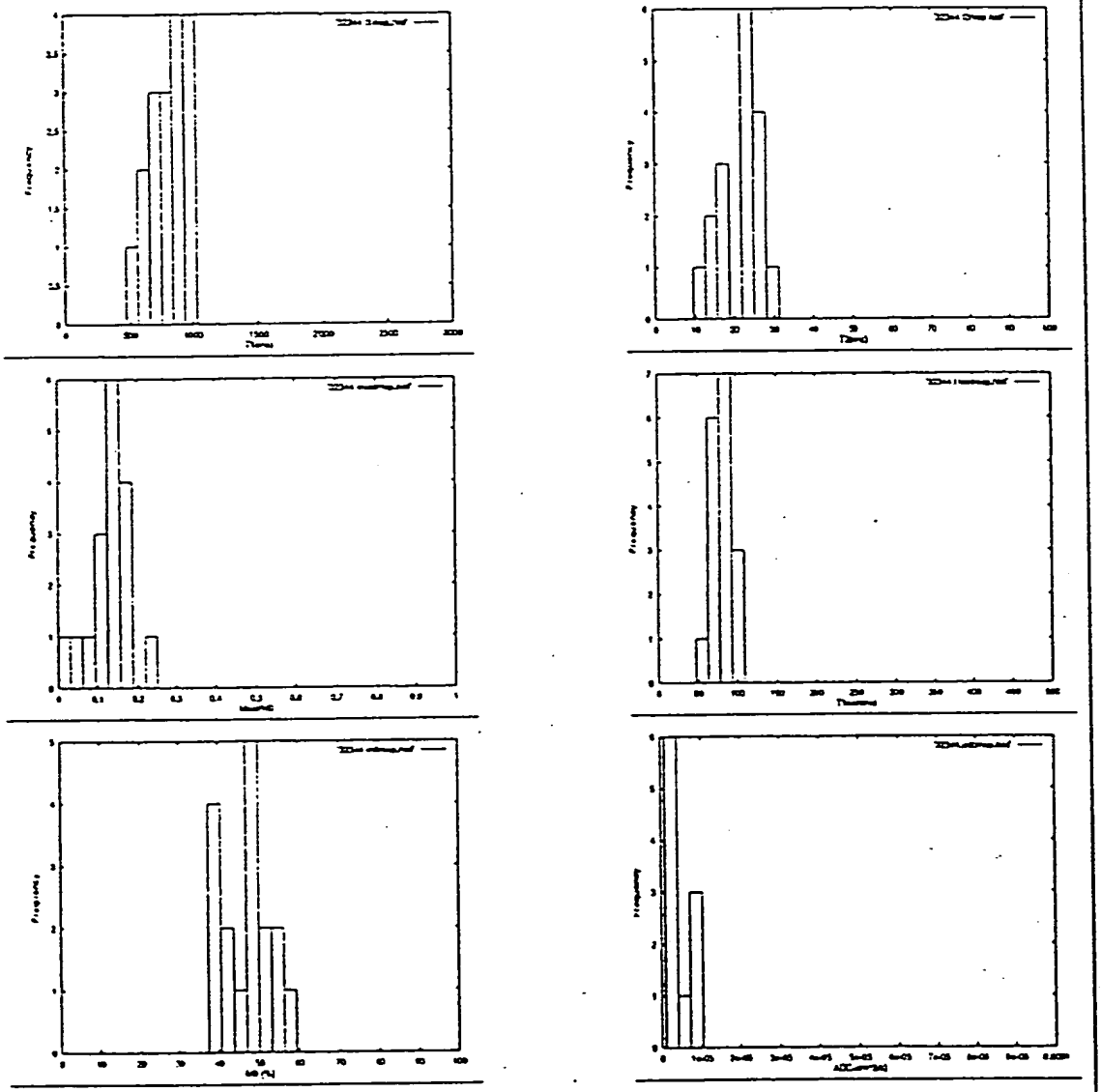
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 39 Automated output of histograms for C2 mask 4

10509705.020899

C1 mask 5, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	48.6	1.5	Msat/M0	0.136	0.012
T1(ms)	830	37	T1sat(ms)	84	4
T2(ms)	22.5	1.4	ADC(cm2/s)	3.7e-06	7.7e-07



ongg 3804-3809-5

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

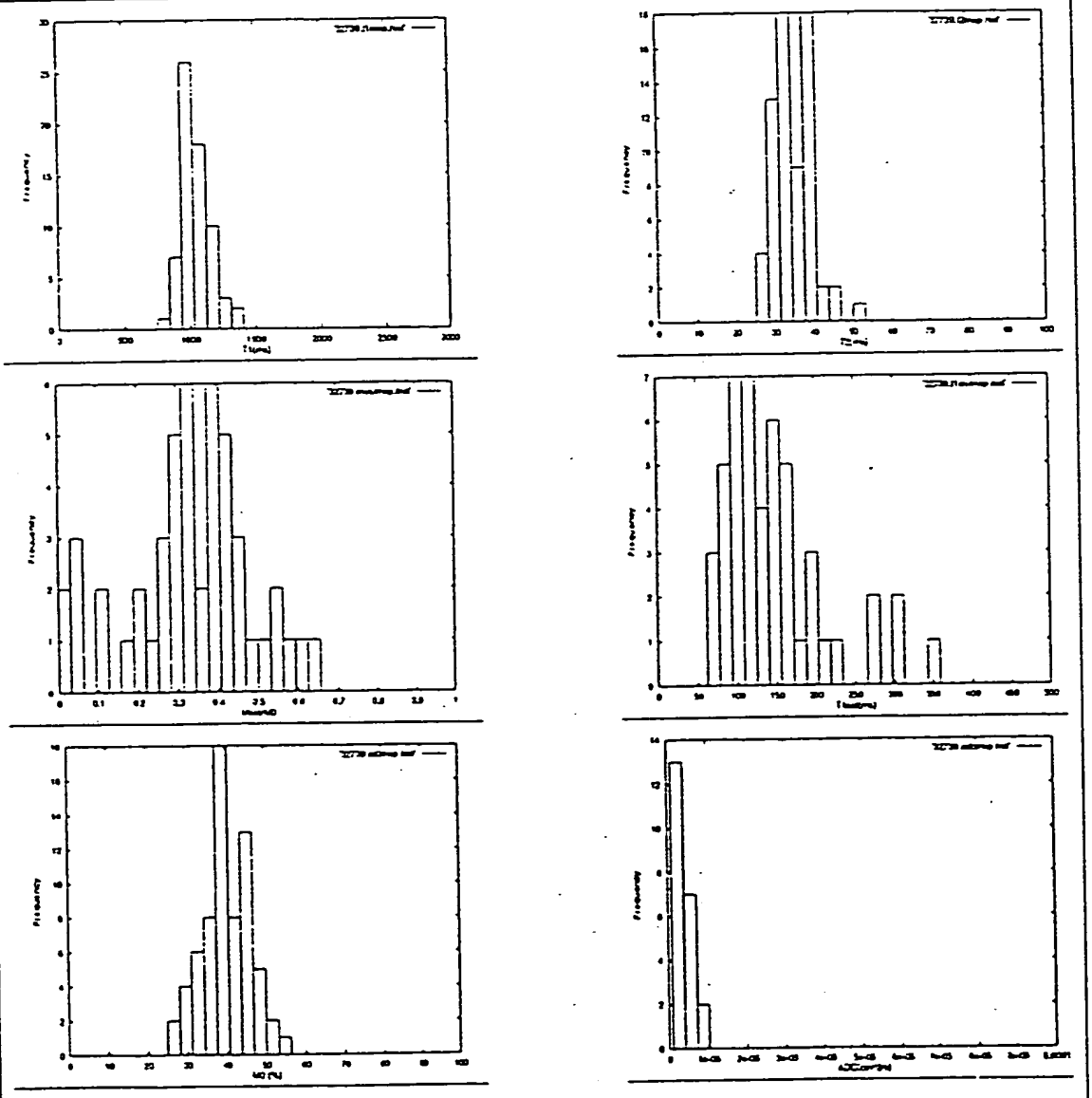
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 40 Automated output of histograms for C2 mask 5

1050404 "04082350

C1 mask 6, repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	41.5	0.8	Msat/M0	0.344	0.023
T1(ms)	1082	15	T1sat(ms)	153	10
T2(ms)	36.1	0.6	ADC(cm2/s)	3.3e-06	4.5e-07



ongg 3804-3809

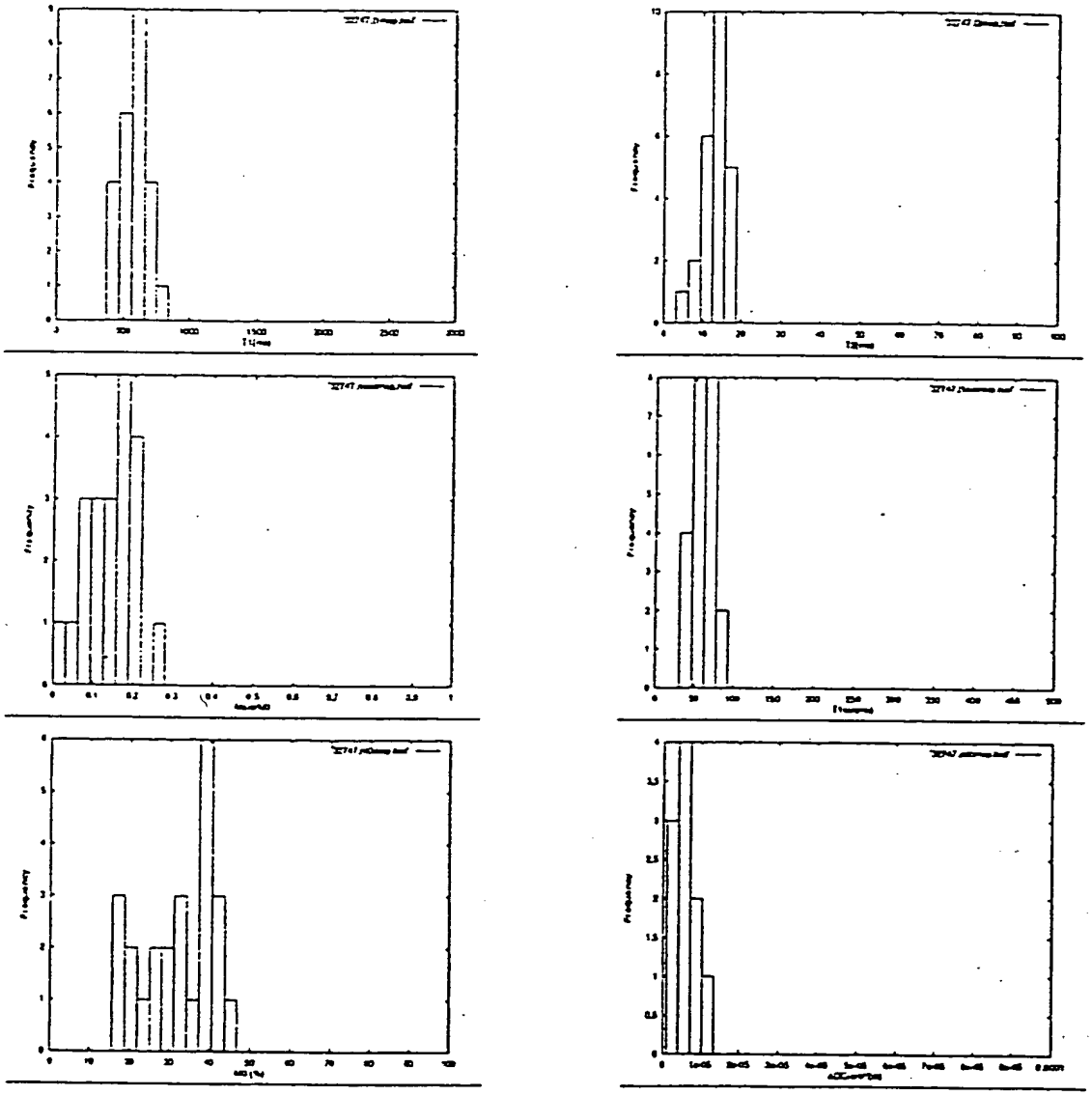
x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 41 Automated output of histograms for C1 mask 6

1050410 "02/08/2010

C1 mask 7, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	33.1	1.9	Msat/M0	0.145	0.013
T1(ms)	591	22	T1sat(ms)	62	3
T2(ms)	13.5	0.7	ADC(cm2/s)	3.9e-06	9.6e-07



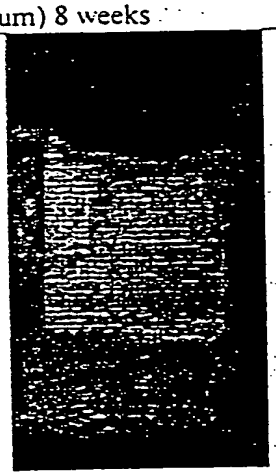
ongg 3804-3809-7

x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 42 Automated output of histograms for C1 mask 7

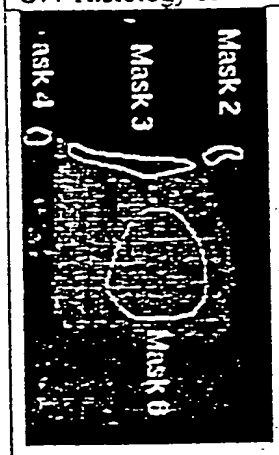
Patent Application Serial No. 09/760,350

C77 (ACD3 + HAED, no synovium) 8 weeks



C77 Histology of defect

C77 MRI of defect



qMRI masks 2,3,4,8

Histology of mask 8, Retained matrix

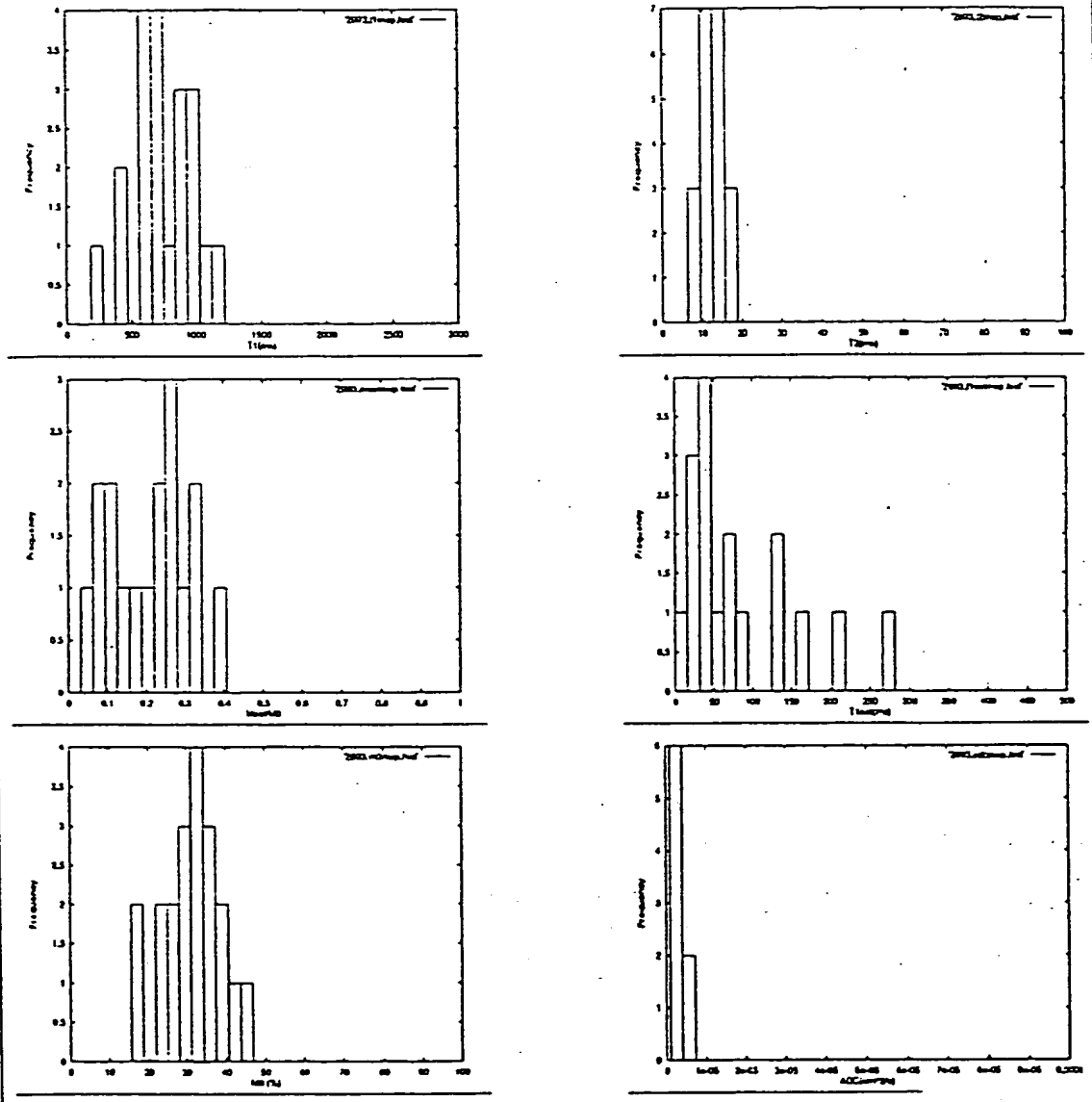
Histology of mask 3, repair tissue

Figure SRL 43
Histology and MRI for C77 (ACD3 + HAED) at 8 weeks

1050410-0086850

C77 mask 2

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	32.4	1.7	Msat/M0	0.216	0.027
T1(ms)	783	55	T1sat(ms)	88	19
T2(ms)	13.2	0.8	ADC(cm2/s)	3.3e-06	5.6e-07



pigc 4413-4418-2

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

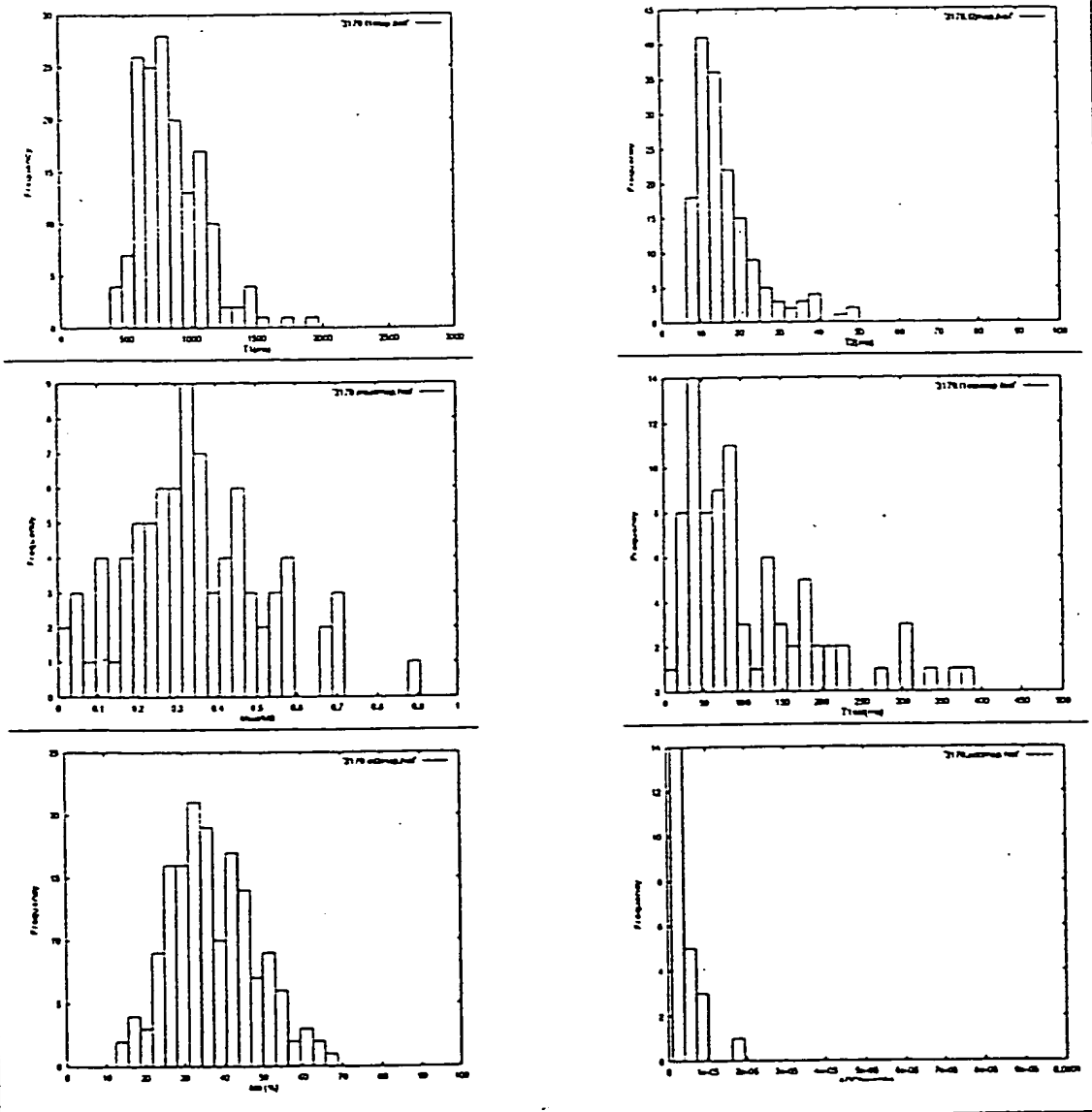
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 44 Automated output of histograms for C77 mask 2

T2050410 - 02/08/2050

C77 mask 3

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	38.5	0.9	Msat/M0	0.355	0.020
T1(ms)	884	20	T1sat(ms)	112	10
T2(ms)	17.3	0.7	ADC(cm2/s)	2.4e-06	5.1e-07



pigc 4413-4418-3

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

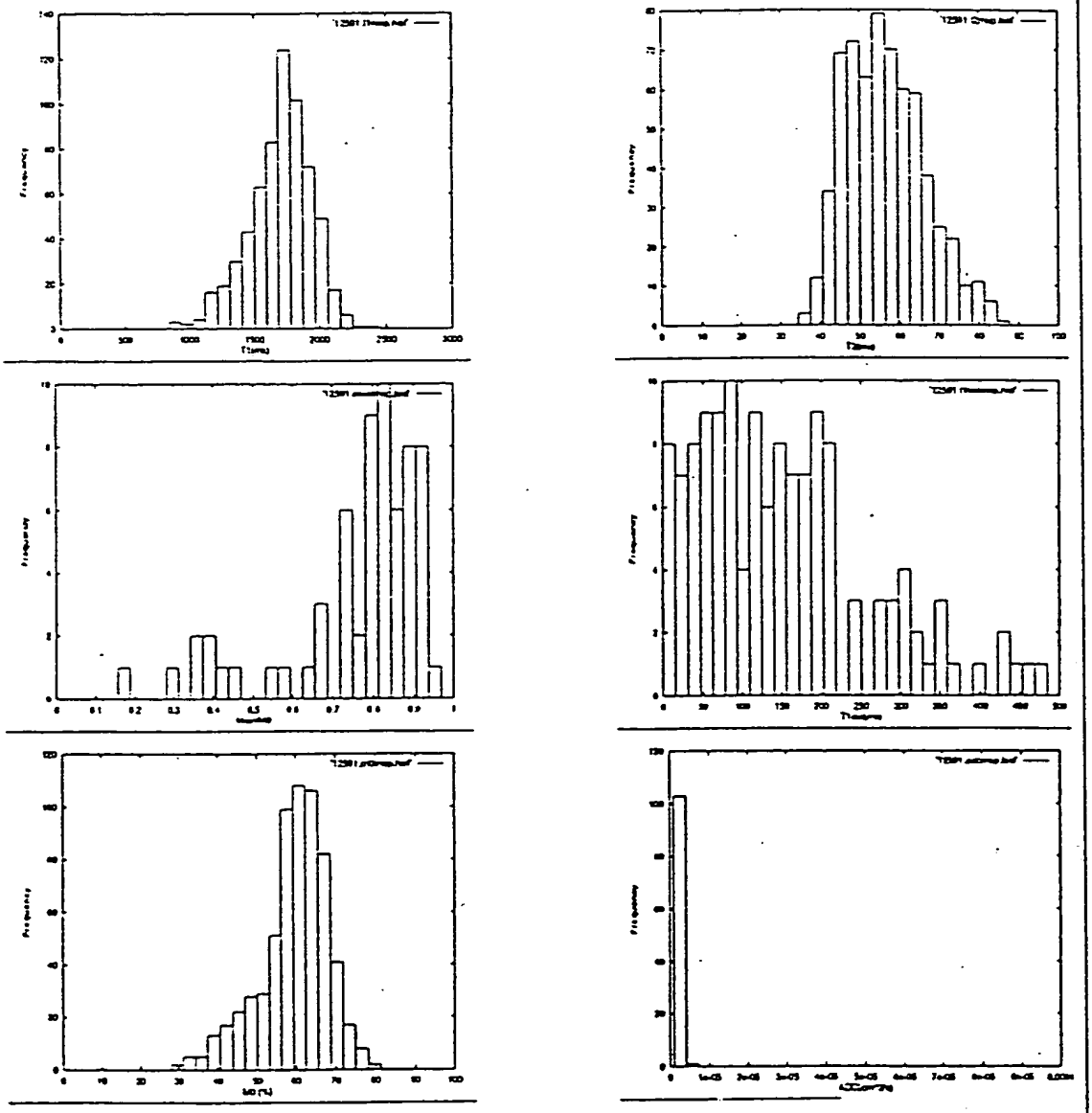
y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 45 Automated output of histograms for C77 mask 3

EXHIBIT 2003

C77 mask 8

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	61.4	0.4	Msat/M0	0.785	0.023
T1(ms)	1758	10	T1sat(ms)	222	18
T2(ms)	58.4	0.4	ADC(cm2/s)	1.3e-06	6.7e-08



pigc 4413-4418-8

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 46 Automated output of histograms for C77 mask 8

Petitioner's Exhibit 1026 - Page 1026

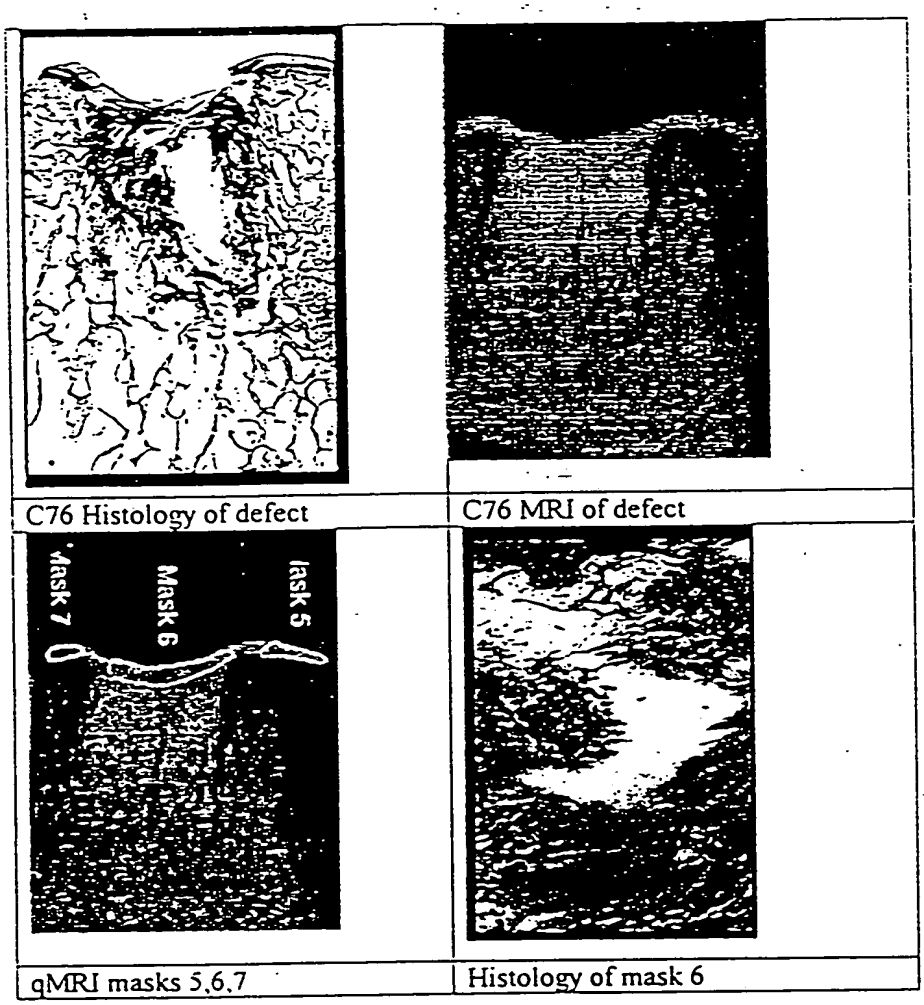
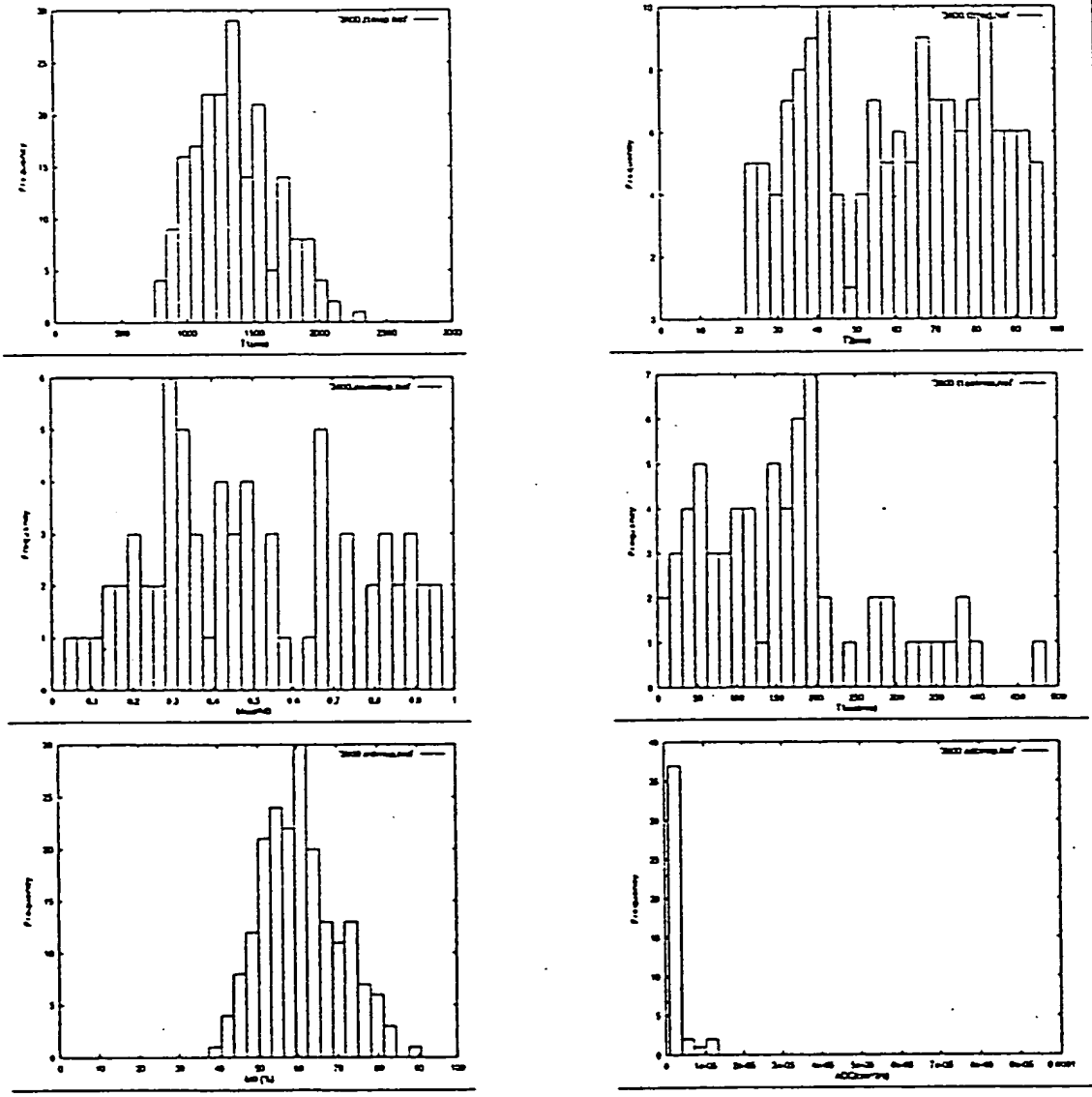


Figure SRL 47
Histology and MRI for C76 (ACD3 + HAED) at 8 weeks

EXHIBIT 2008

C76 mask 6, retained matrix ÷ repair tissue

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	62.6	0.7	Msat/M0	0.509	0.032
T1(ms)	1425	26	T1sat(ms)	197	20
T2(ms)	77.0	2.5	ADC(cm2/s)	1.8e-06	2.5e-07



pigc 4413-4418-6

x axis – number of pixels with the same value
LHS- top T1,middleMsat/M0,bottom M0.

y axis - range of values.
RHS - top T2,mid T1sat,bottom ADC

Figure SRL 48 Automated output of histograms for C76 mask 6

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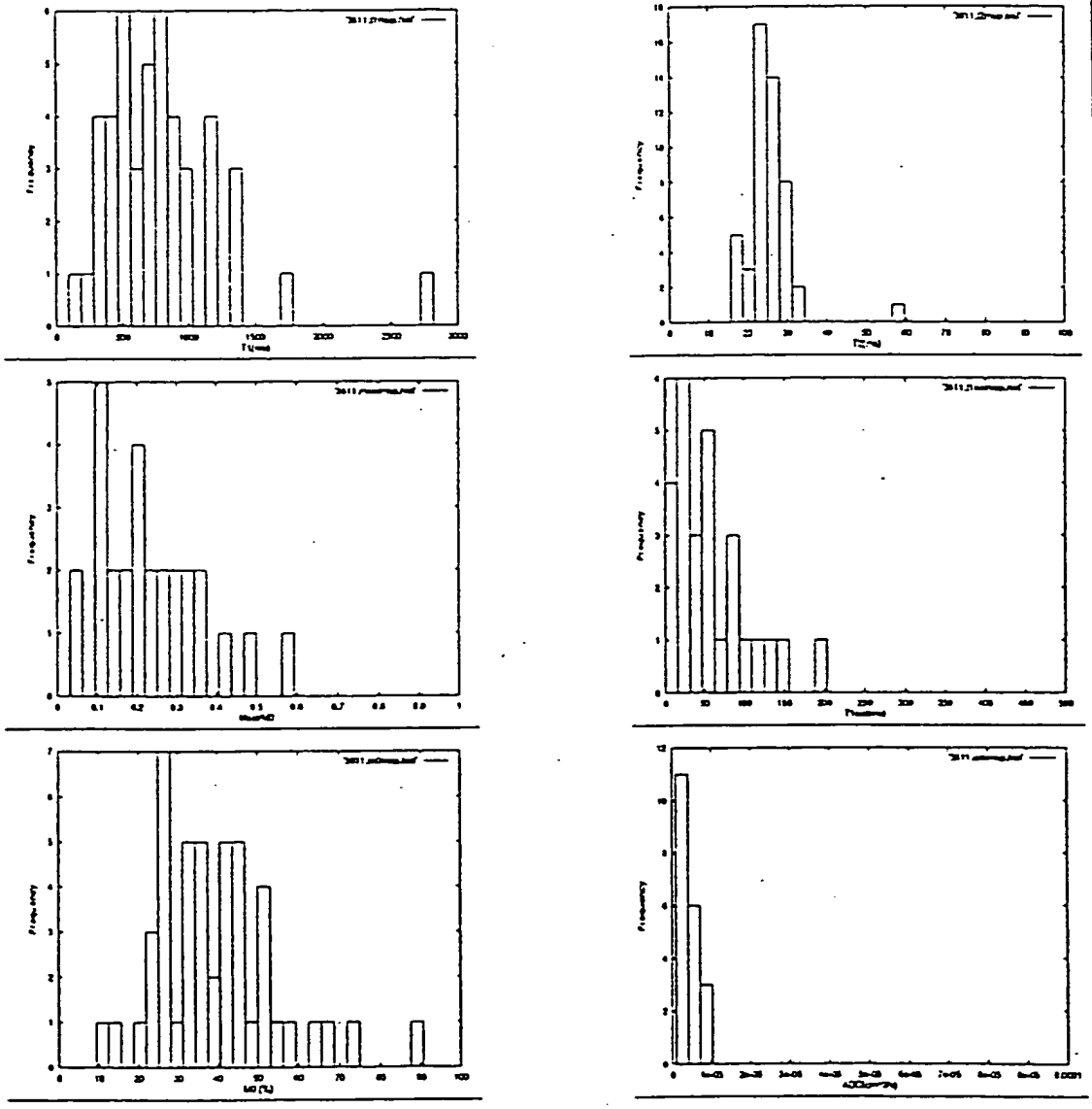
C76 mask 5, cartilage adjacent to the defect

Parameter	Value	(s.e.)	Parameter	Value	(s.e.)
M0(%)	40.7	2.3	Msat/M0	0.241	0.025
T1(ms)	864	83	T1sat(ms)	62	10
T2(ms)	26.3	0.9	ADC(cm2/s)	3e-06	4.7e-07



pigc 4413-4418-5

x axis – number of pixels with the same value y axis - range of values.
LHS- top T1,middleMsat/M0,bottom M0. RHS - top T2,mid T1sat,bottom ADC

Figure SRL 49 Automated output of histograms for C76 mask 5

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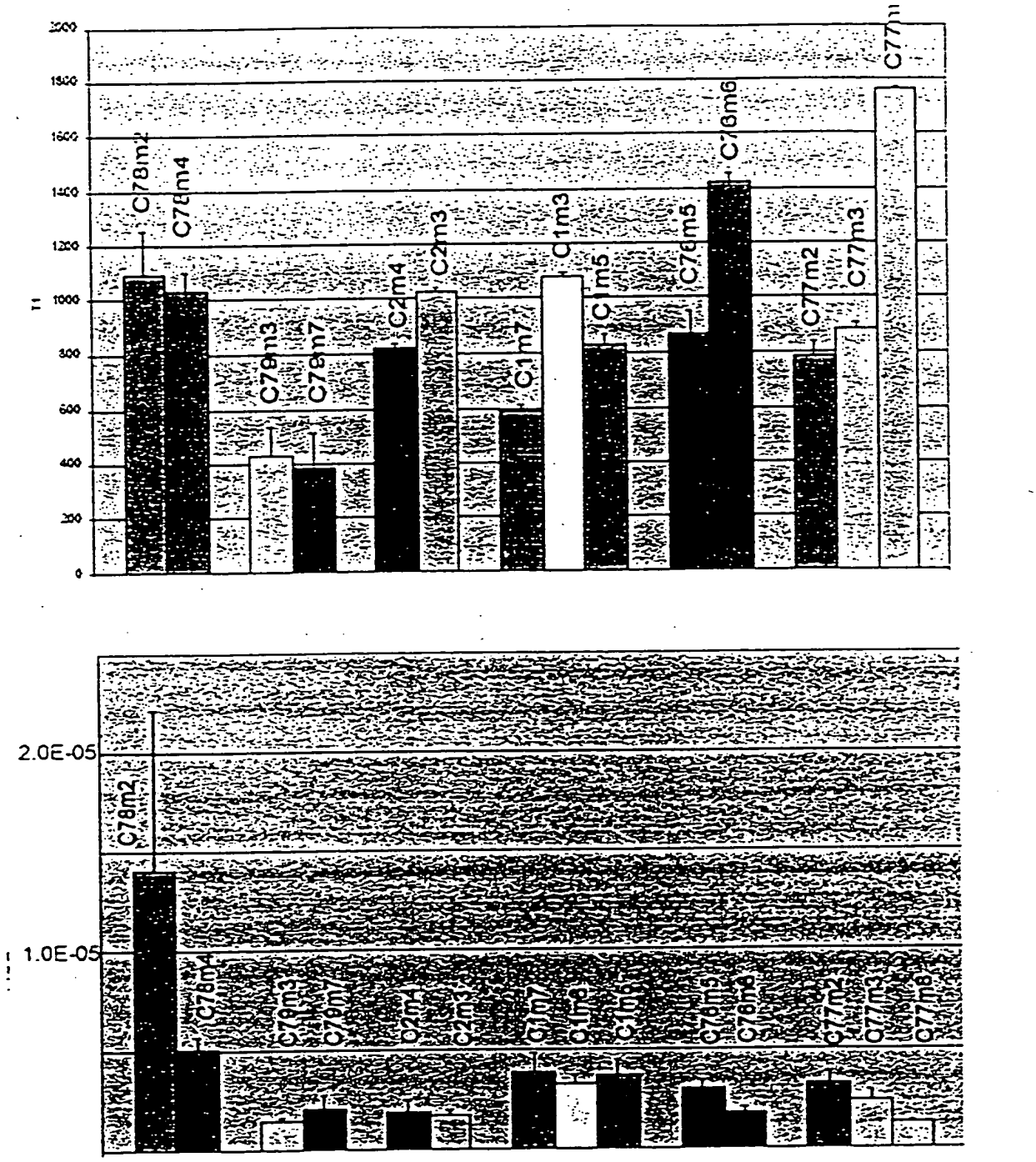
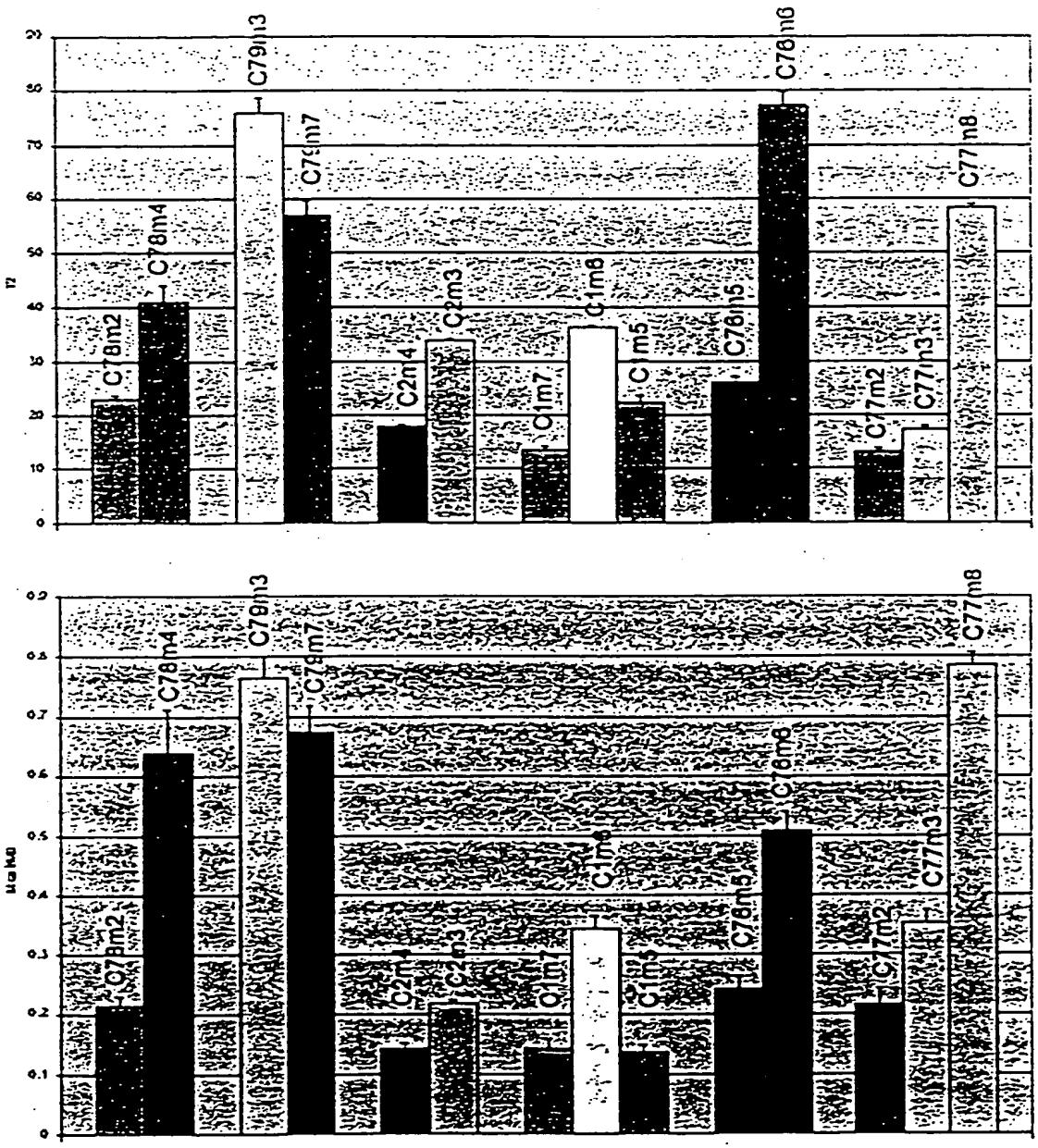
T0504P0 "0708360



Summary of T1 and ADC in ACD3 defects

Figure SRL 50a. Summary of mean values of T1 (above) and ADC (below) for repair tissue in ACD3 defects C1, C2, C76, C77, C78 and C79.



Summary of T_2 and M_{sat}/M_0 in ACD3 defects

Figure SRL 50b. Summary of mean values of T_2 (above) and M_{sat}/M_0 (below) for repair tissue in ACD3 defects C1, C2, C76, C77, C78 and C79.

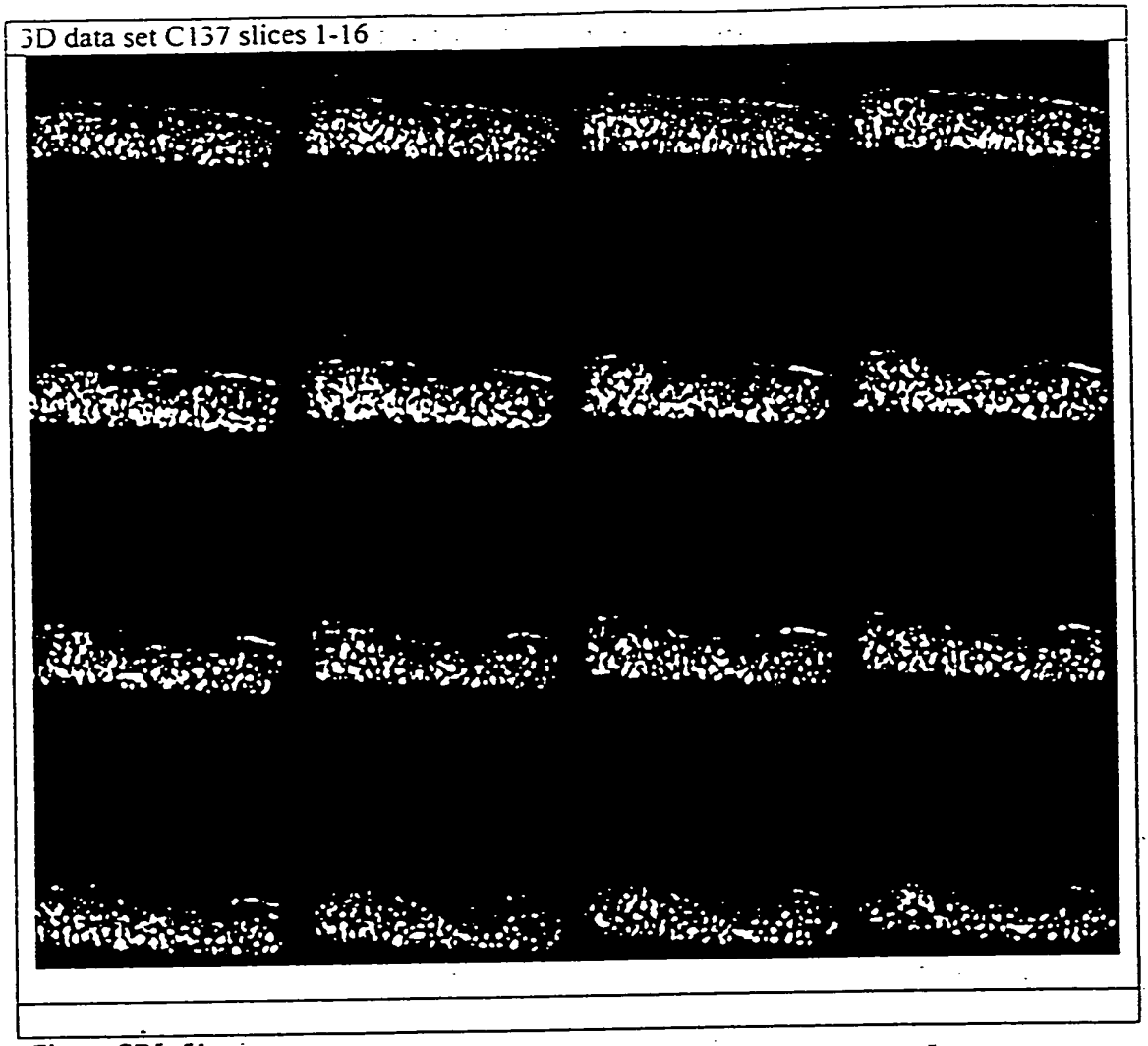


Figure SRL 51a
Adjacent slices (150µm) from a 3D data set showing views from one side of defect C137 (virtual ACD1 + PEG Triacrylate) to the other

PCT/US2007/008290

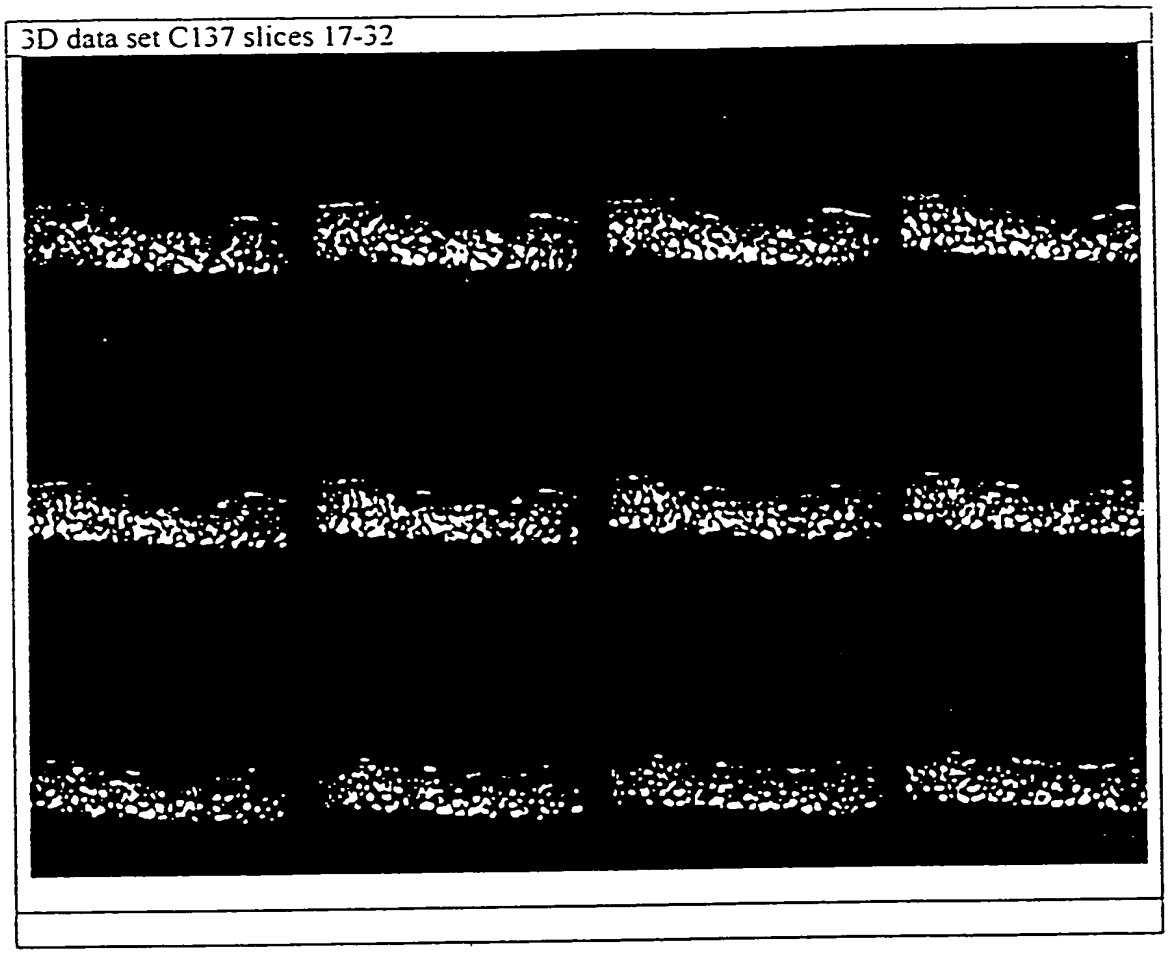


Figure SRL 51b
Adjacent slices (150μm) from a 3D data set showing views from one side of defect C137 (virtual ACD1 + PEG Triacrylate) to the other

Patent Application Publication

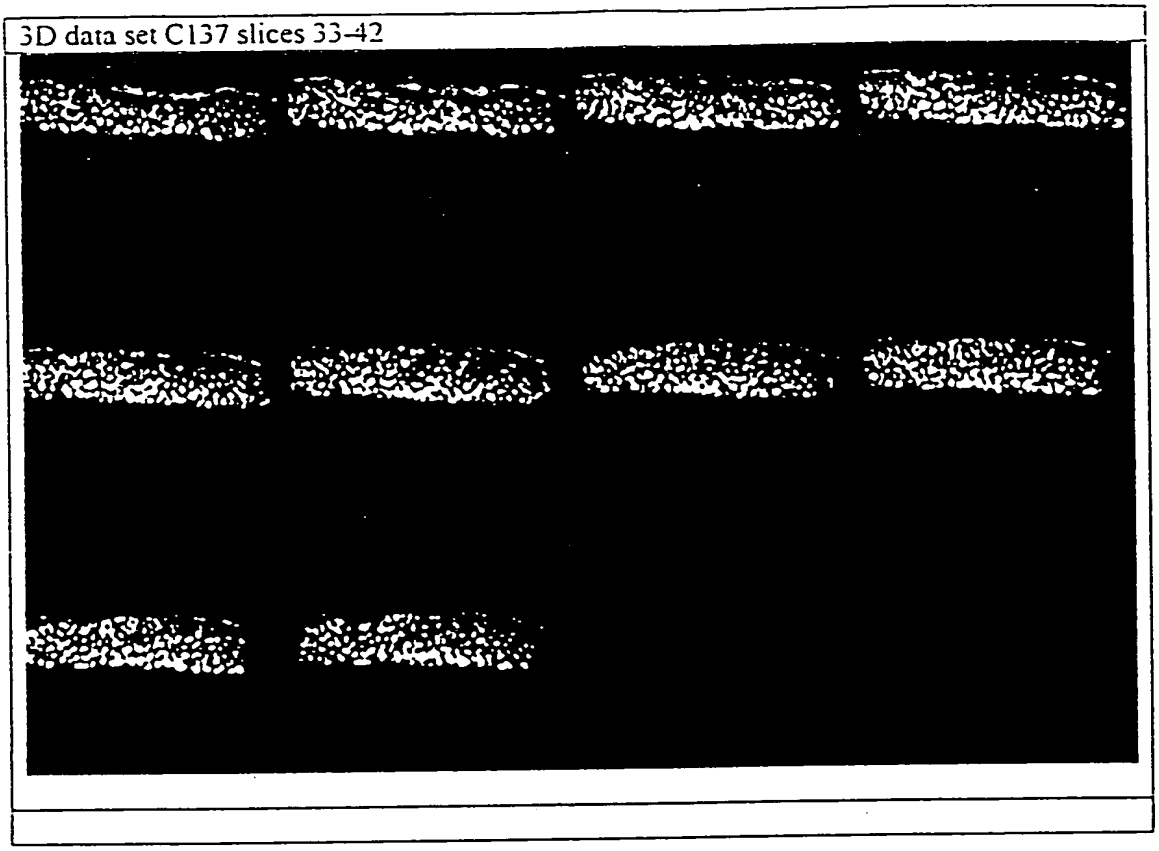


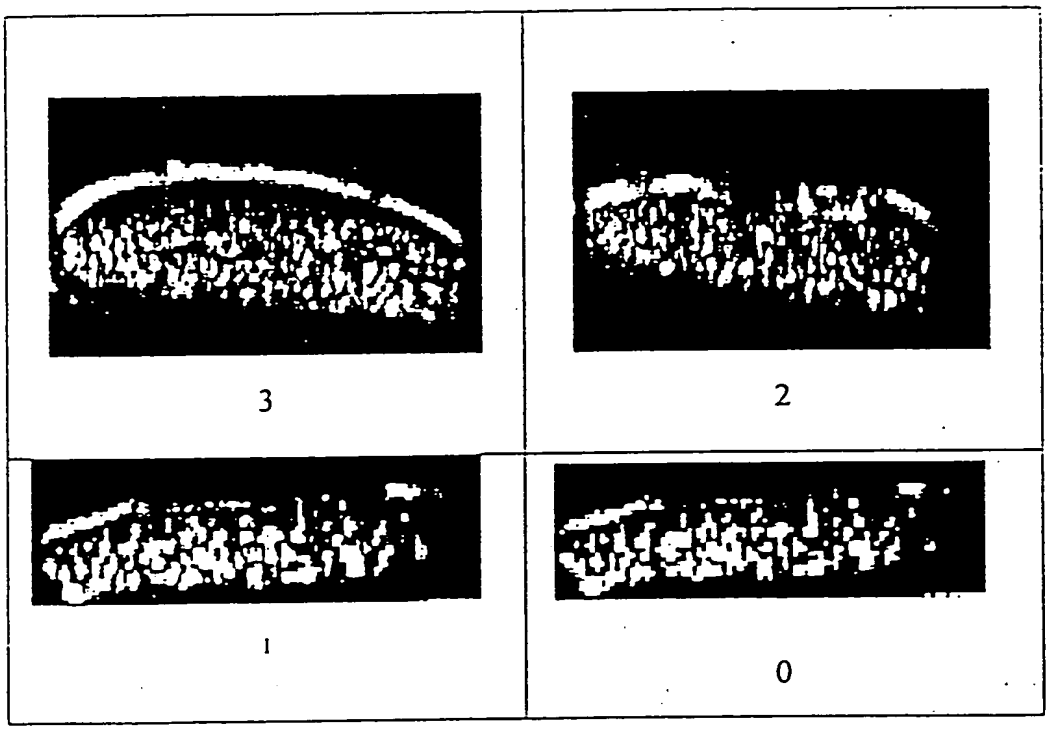
Figure SRL 51c
Adjacent slices (150μm) from a 3D data set showing views from one side of defect C137 (virtual ACD1 + PEG Triacrylate) to the other

Express Mail Label No. EV 339 905 705 US

Scoring ACD1 defects from 3-D MRI scans

Degree of filling of the repair tissue in the defect

0	0-20% filling.
1	21-40% filling.
0	41-70% filling
1	70-100% filling.



Sagittal view of defects from a 3D data set

Figure SRL 52
Scoring ACD1 defects from 3-D MRI scans. Degree of filling in the defect

Express Mail Label No. EV339825405US

Scoring ACD1 defects from 3-D MRI scans

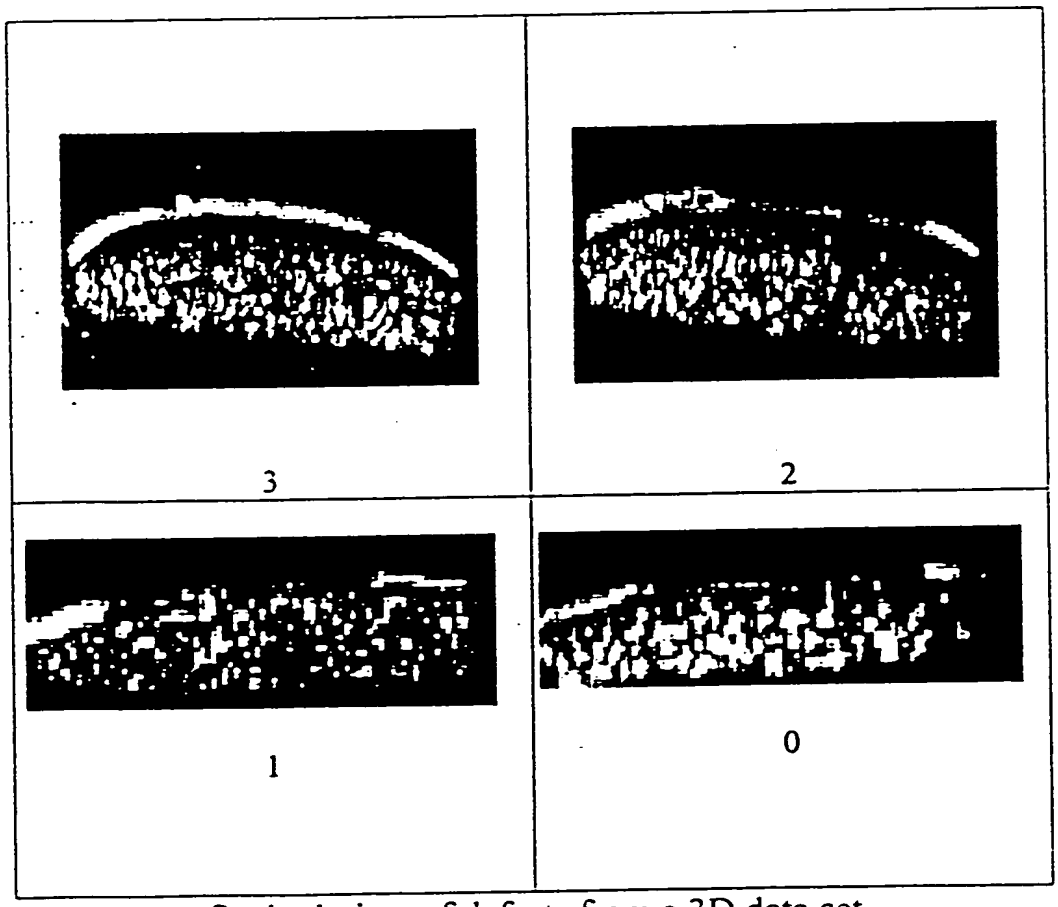
Integration of the repair tissue to the surrounding cartilage

0 No integration to the sides or bone-cartilage interface.

1 Minimal integration (20-40%) to the sides or bone-cartilage interface.

2 Moderate integration (41-90%) to the sides or bone-cartilage interface.

3 Full integration (91-100%) to the sides and bone-cartilage interface.



Sagittal view of defects from a 3D data set

Figure SRL 53
Scoring ACD1 defects from 3-D MRI scans. Integration of repair tissue in the defect

Doc. No. 021087000100

EL504470202868860

Scoring ACD1 defects from 3-D MRI scans

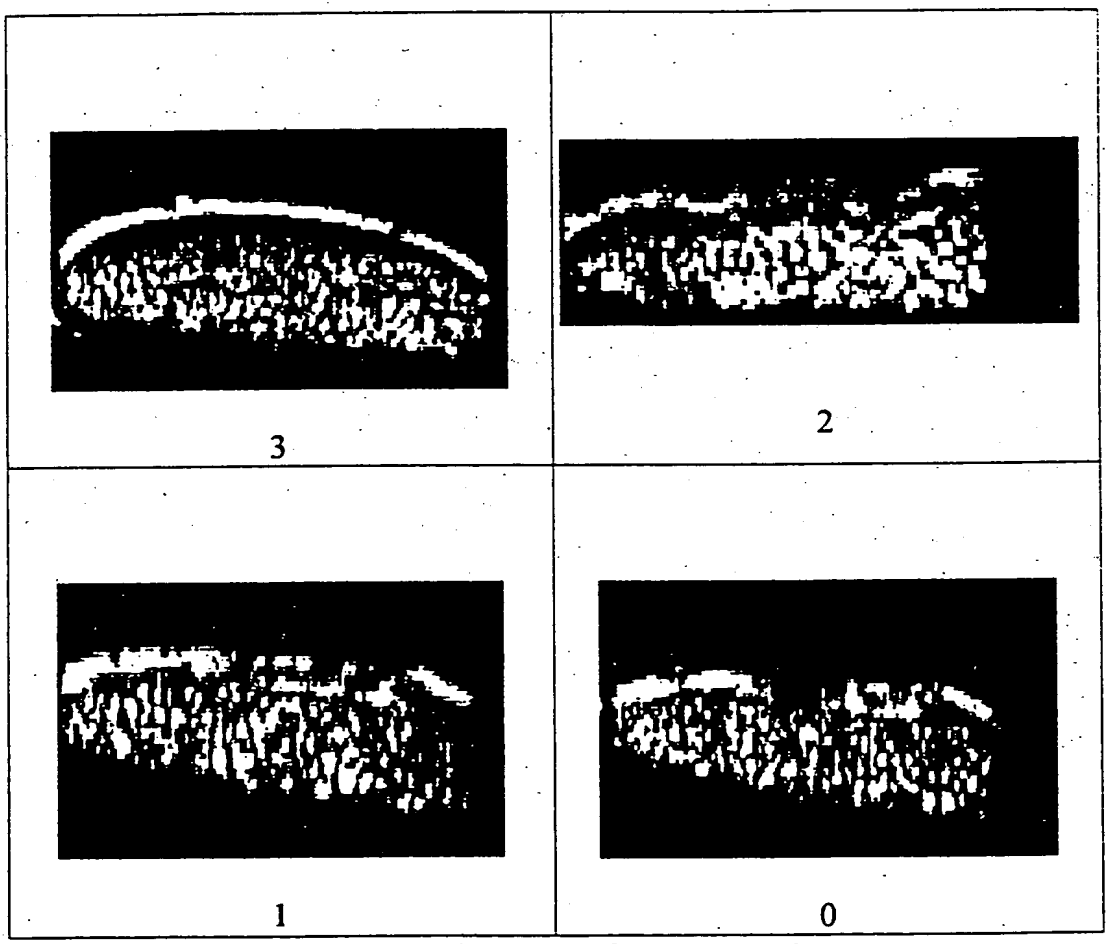
Surface smoothness of the repair tissue

0 Marked fraying extending to the bone surface in the repair tissue.

1 Fraying limited to within the substance of the repair tissue.

2 No fraying but the surface appears rough and wavy.

3 Smooth surface.



Sagittal view of defects from a 3D data set

Figure SRL 54
Scoring ACD1 defects from 3-D MRI scans. Smoothness of surface repair

Scoring ACD1 defects from 3-D MRI scans

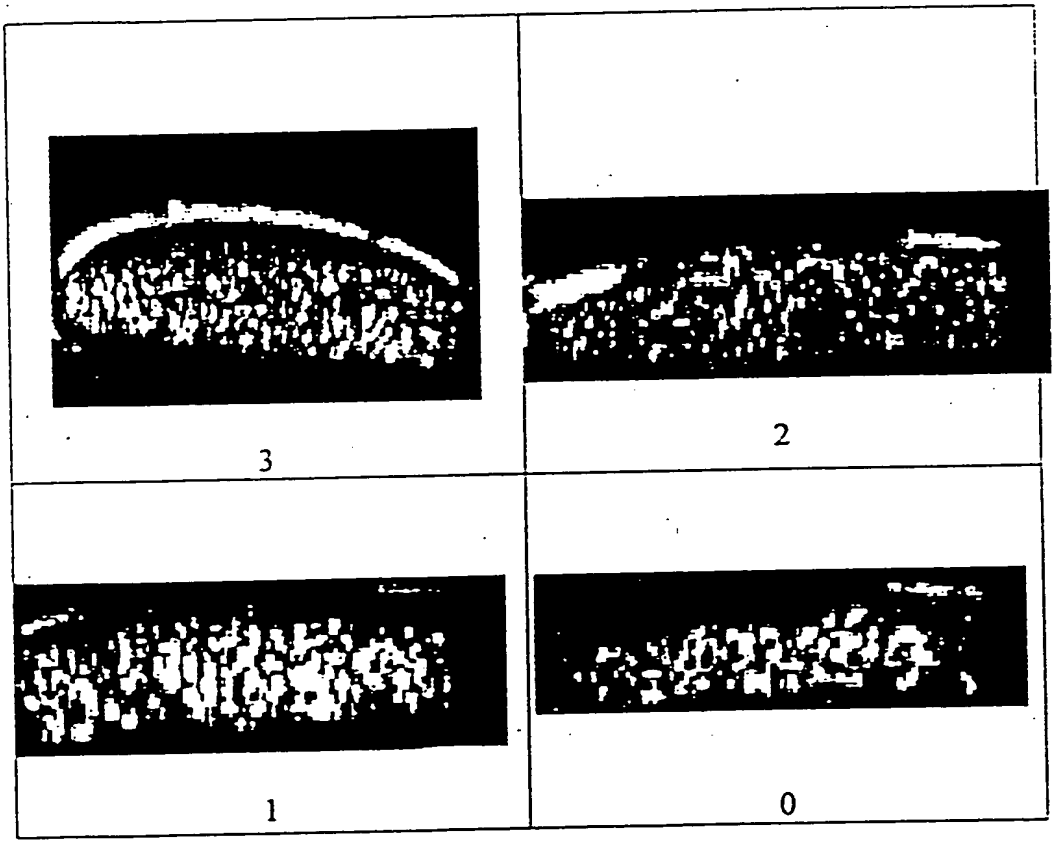
Disruption of subchondral and trabecular bone

0 SC bone plate absent with marked loss of trabecular bone.

1 SC bone plate broken with disruption of the trabecular bone pattern.

2 SC bone plate interrupted with no alteration to the trabecular bone pattern.

3 SC bone plate normal with normal trabecular bone underneath.



Sagittal view of defects from a 3D data set

Figure SRL 55. Scoring ACD1 defects from 3-D MRI scans.
Disruption of trabecular and subchondral bone

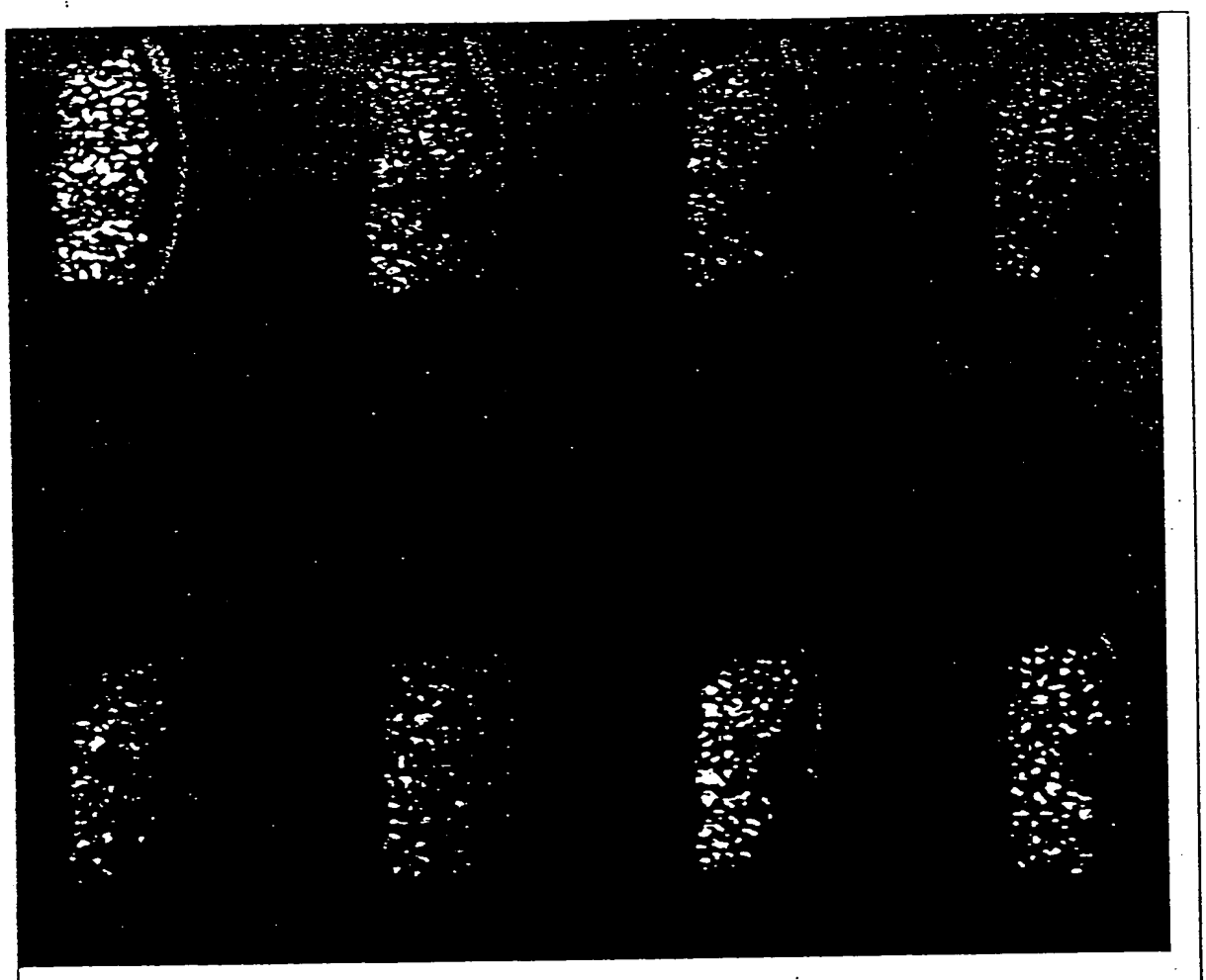
EFS Web - 07/08/2008

Scoring ACD1 defects from 3D MRI scans

G	Specimen	Filling	Integration	Surface	Bone	Signal	Total
G84	C151	3	3	2	3	2	13
G45	C118	0	0	0	3	0	3
G80	C123	3	1	2	2	2	10
÷G69	C132	0	0	0	1	0	1
G70	C133	0	0	0	1	0	1
G63	C129	3	2	2	3	2	12
G81	C126	0	0	0	2	0	2
G77	C121	0	0	0	3	0	3
G56	C119	0	0	0	3	1	4
G68	C134	0	0	0	1	0	1
G61	C137	0	0	0	2	1	3
G78L	C139	1	1	1	2	2	7
G78R	C138	0	1	0	2	1	4
G73	C143	2	1	1	3	1	8
G66	C145	0	0	0	2	1	3
G83	C146	0	0	0	3	0	3
K2	C149	1	0	0	3	1	5
G86	C156	1	1	0	3	1	6
G87	C157	2	1	1	2	2	8
G52	C116	0	0	0	3	1	4
G58	C131	2	1	1	3	2	9
G59	C128	3	2	1	3	2	11

Figure SRL 56. Table summarising scores of ACD1 defects from 3-D MRI scans.

EXHIBIT 2005

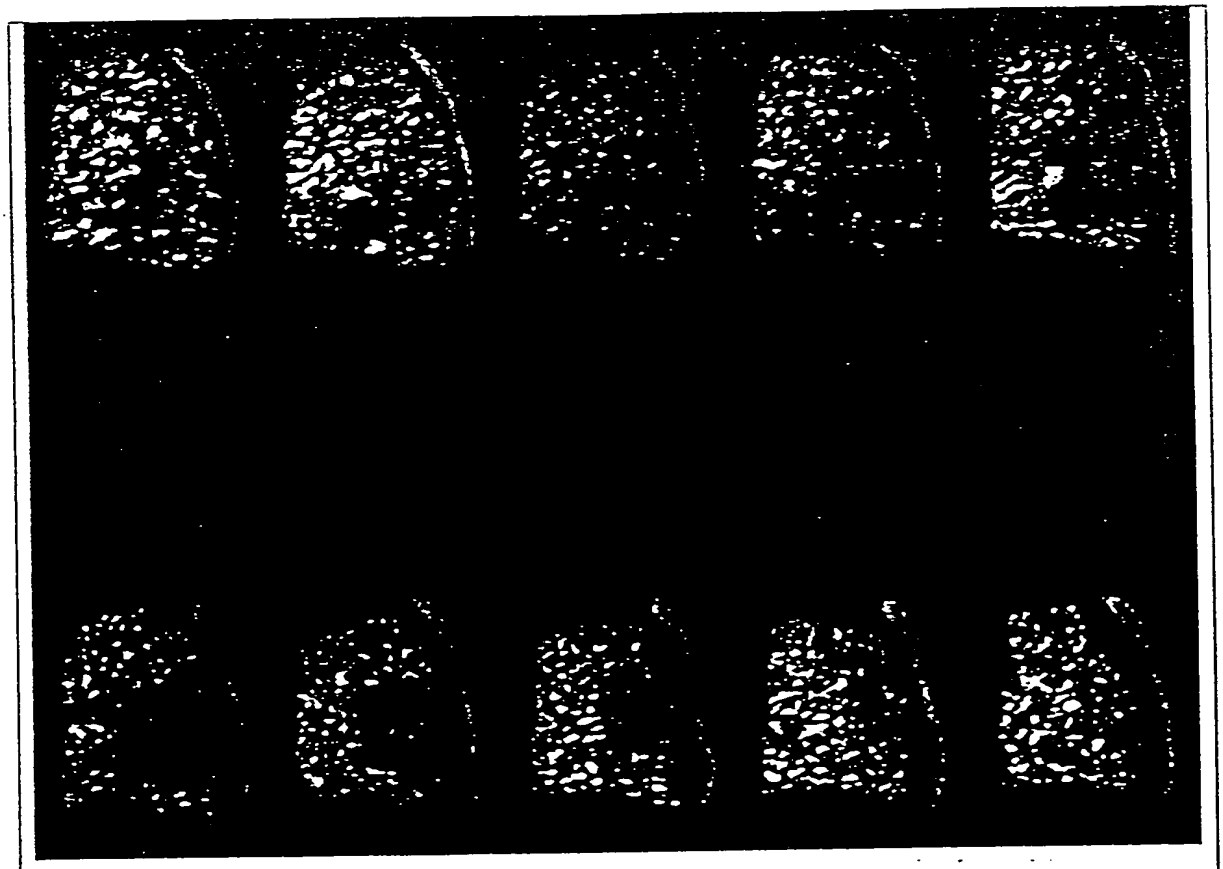


G34 Right medial condyle (C181)

Score : filling -2 , integration-1, surface-2, bone-1, signal-3. Total 9 [max 15]

Figure SRL 57 Slices from a 3D data set of C181showing views and scoring of an OCT graft in the medial condyle

Patent Application Publication



G34 Right lateral condyle (C182)

Score : filling -2 , integration-1, surface-2, bone-1, signal-3. Total 9 [max 15]

Figure SRL 58 Slices from a 3D data set of C182 showing views and scoring of an OCT graft in the lateral condyle

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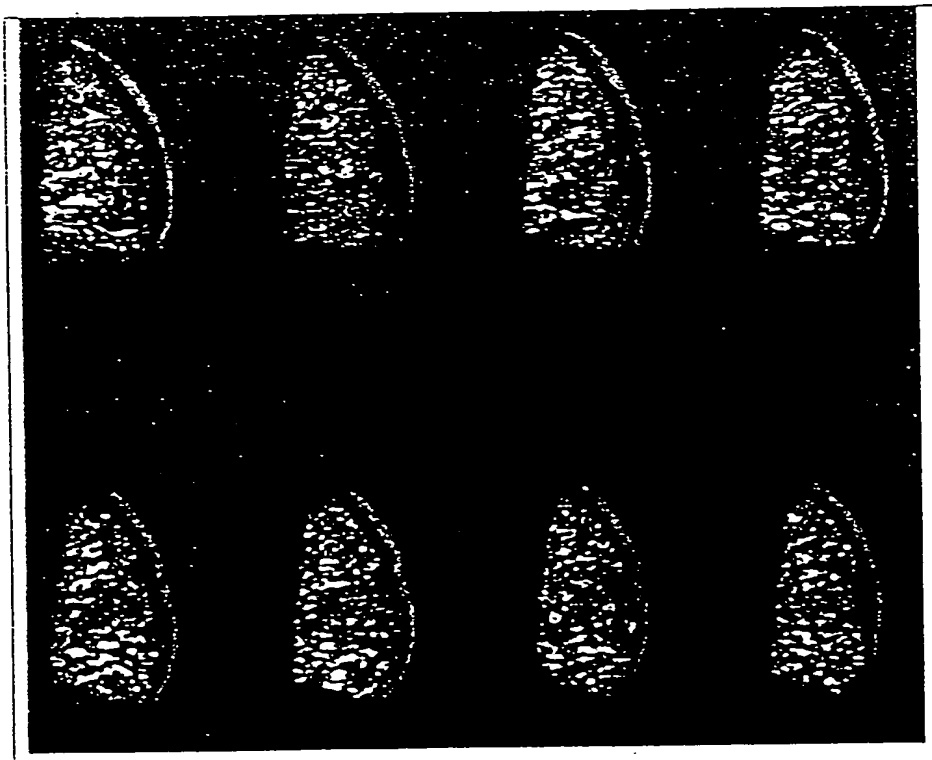
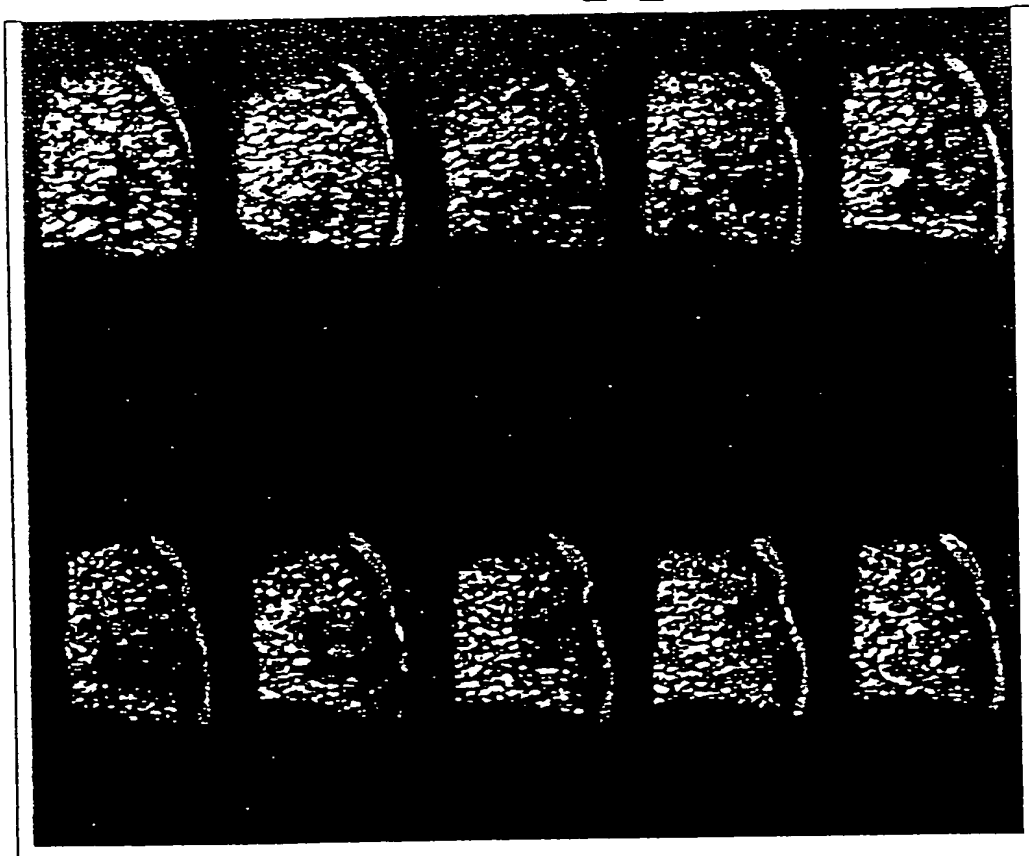


G33 Right lateral condyle (C174)

Score : filling -3 , integration-3, surface-1, bone-3, signal-3. Total 13 [max 15]

Figure SRL 59 Slices from a 3D data set of C174 showing views and scoring of an OCT graft in the lateral condyle

PF050400 "0708260



G33 Right medial condyle (C173)

Score : filling -3 , integration-2, surface-2, bone-1, signal-3. Total 11 [max 15]

Figure SRL 60 Slices from a 3D data set of C173 showing views and scoring of an OCT graft in the medial condyle

1050407.02800.0

Scoring Osteochondral (OCT) grafts from 3D MRI scans

	Sample	Filling	Integration	Surface	SC Bone	Signal	Total (max 15)
C181	G34 – Rt Knee Medial Condyle	2	1	2	1	3	9
C182	G34 – Rt Knee Lateral Condyle	2	1	2	1	3	9
C173	G33 – Rt Knee Medial Condyle	3	2	2	1	3	11
C174	G33 – Rt Knee Lateral Condyle	3	3	1	3	3	13

Figure SRL 61. Table summarising scores OCT grafts from 3-D MRI scans

FP 5040-0 02/08 2350

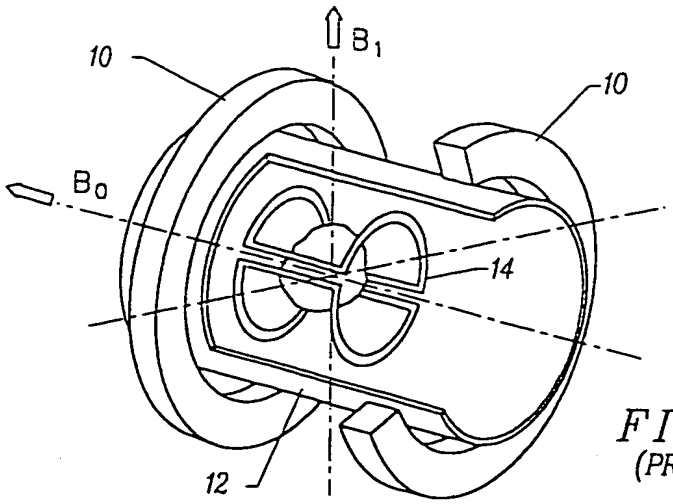


FIG. 6L A
(PRIOR ART)

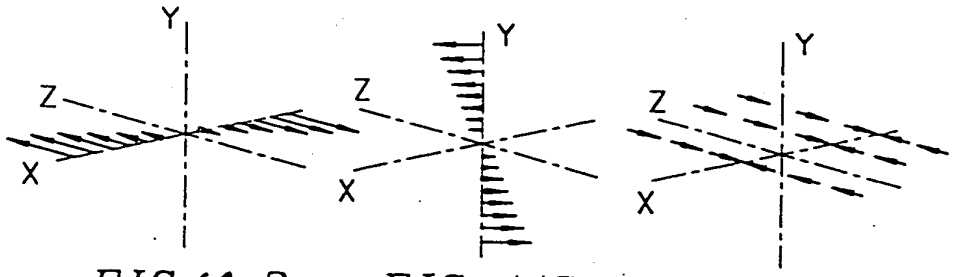


FIG. 6L B FIG. 6L C FIG. 6L D

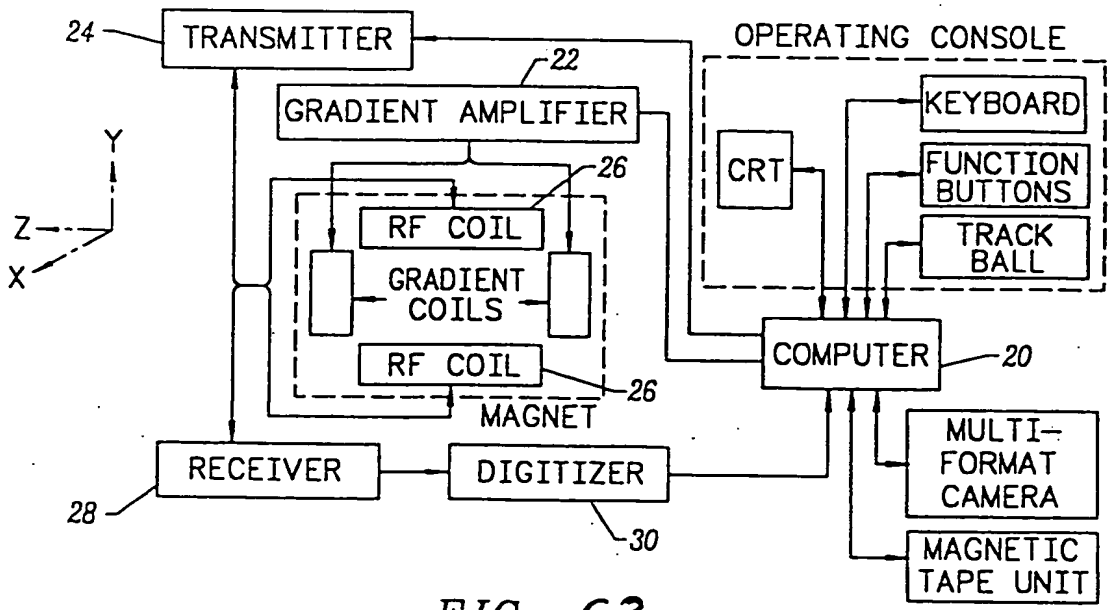


FIG. 6B
(PRIOR ART)

FOSTER "021087000100

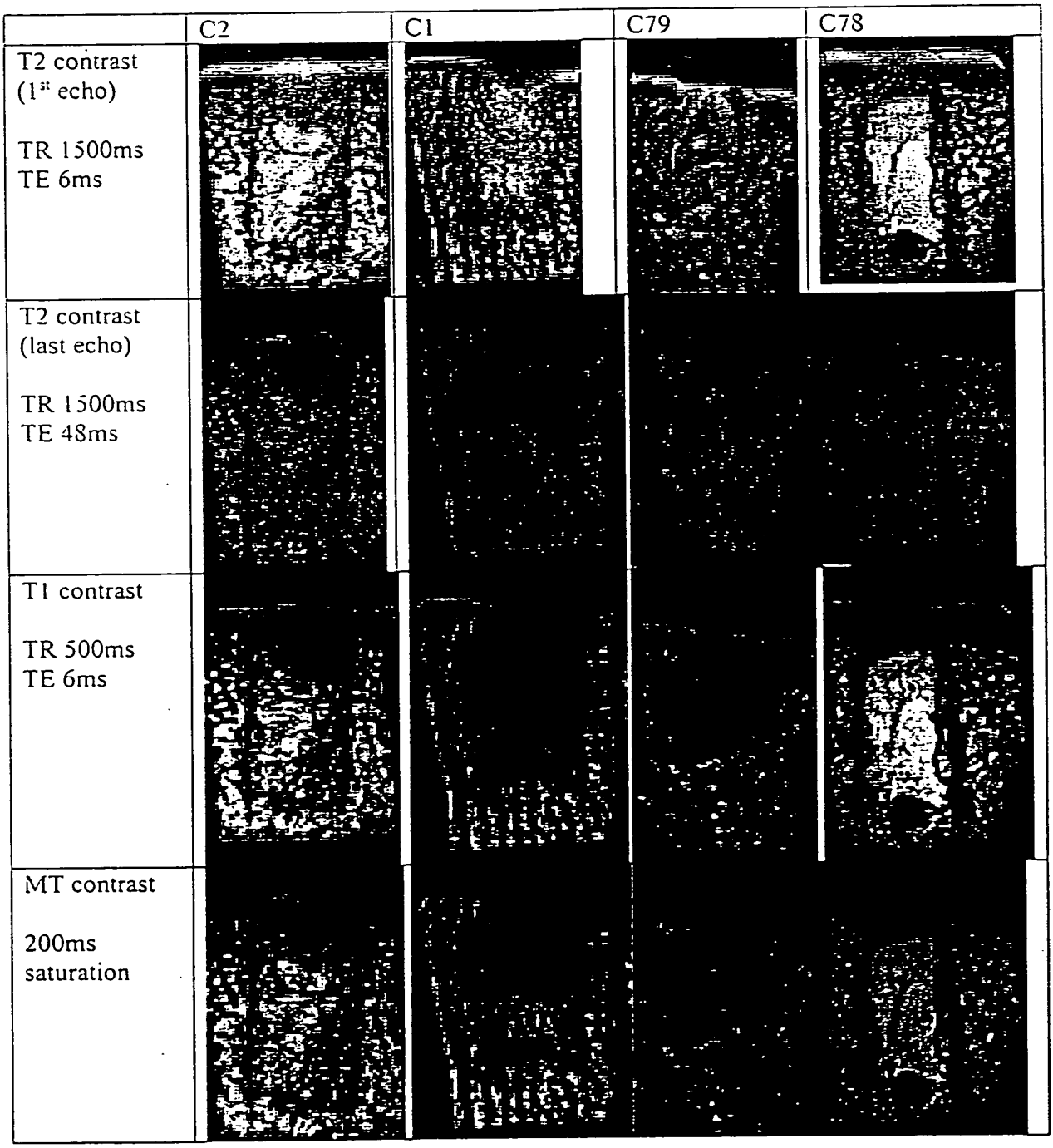
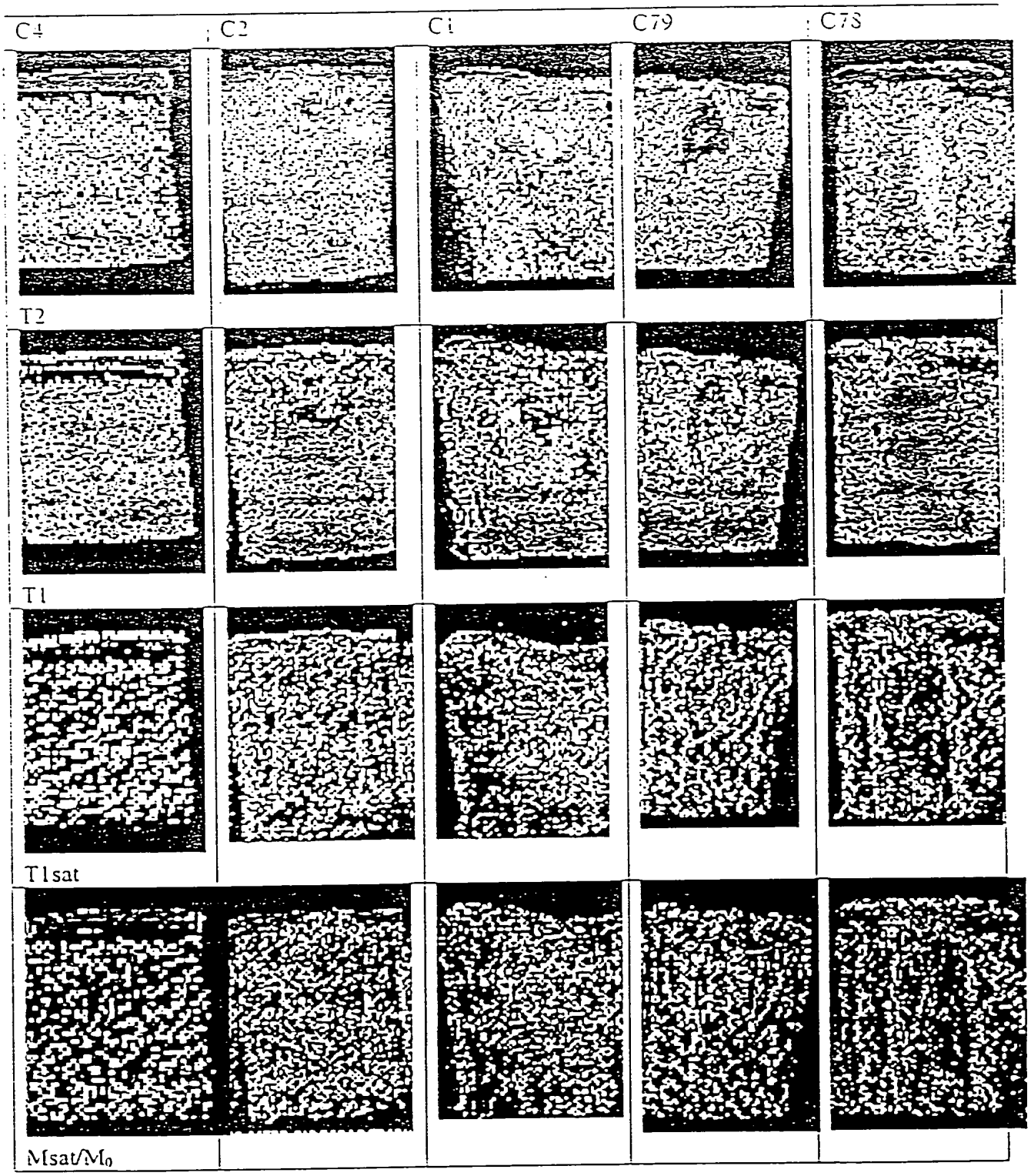


Figure SRL 7
Selected MR scans from qMRI analysis of spontaneously healed ACD3 defects C1, C2, C78, C79 at 8 weeks.

FIG. 64A

Patent Application Publication



Quantitative spatial maps of MR parameters

FIG. 64B

10504070.020802

T2 Spatial Maps

Control cartilage (C4)

ACD3 Spontaneous Repair (C1) matrix (C77)

ACD3 Implanted

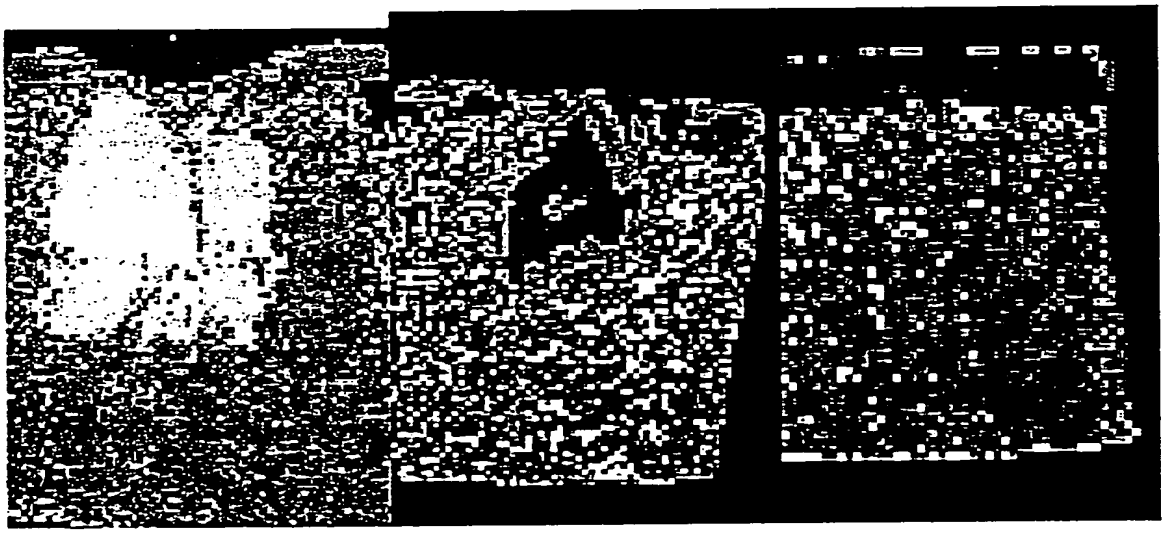
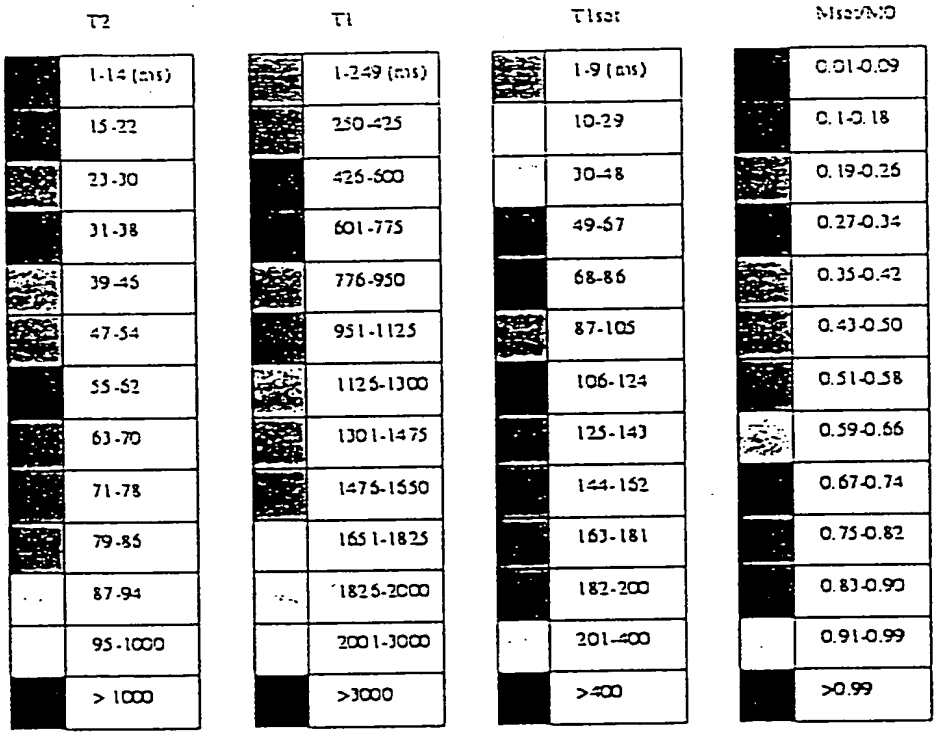


FIG. 64C

see Fig. SRL 2
Figs. SRL 47,48,49

~~see Figs. SRL 32 & 35~~

see



Note the colour scales are different for T2 relaxation rates of clinical samples.

FIG. 65

Figure 8.8. Range of colours assigned to different qMRI values for spatial maps.
An alternative way of expressing the qMRI data is to colour each pixel according to the range of values shown above. The image can then be displayed as a quantitative spatial map for each MR parameter
for direct comparison with the histology.

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